Continued Accessibility to UG in Non-Native Grammars: the Acquisition of Wh-Movement by Malay learners of English

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To my parents,
with love and gratitude

Declaration

I hereby declare that this thesis is my original work and of my own execution and authorship.

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Abstract

Within the generative framework, it is widely accepted that first language acquisition is constrained by Universal Grammar (UG). In non-native language acquisition, the continued accessibility of UG is a controversial issue. The main purpose of this study is to contribute evidence that UG continues to be accessible to Malay learners of English in the acquisition of wh-movement. Since wh-movement has been argued to be absent at S-structure in Indonesian (Martohardjono, 1993; Martohardjono and Gair, 1992), which is syntactically identical to Malay with respect to wh-movement, we can rule out the possibility of direct L1 transfer to L2 acquisition of wh-movement.

Our main hypothesis is that learners progress from an early non-movement stage to the acquisition of wh-movement through the continued accessibility of movement-related principles, Subjacency and the ECP. We conducted a cross-sectional investigation of Malay learners from four levels of proficiency and a control group of native speakers. The elicitation instruments were an acceptability rating task, an acceptability ranking task and a production task. These tests were designed to test learners' ability (a) to reject UG violations; (b) to reject violations according to the strength with which Subjacency is violated; (c) to reject UG violations according to whether one or two principles are violated; (d) to prefer grammatical extraction over ungrammatical extraction; (e) to overcome L1 influences in the acceptance of local and long-distance wh-movement; (f) to avoid the production of UG violations and to produce grammatical local and long-distance wh-movement.

We found that with continued exposure to the L2, Malay learners increasingly reject Subjacency and ECP violations. Mid- and high-level learners also demonstrate an acquisitional order which is in accordance with UG theoretic predictions: they reject strong Subjacency violations more decisively than weak Subjacency violations. They also give lower acceptability ratings to the less weak of two weak Subjacency violations than the other violation. Further, they reject sentences violating both Subjacency and ECP principles more markedly than violations of only Subjacency. Advanced level learners, like native speakers, do not discriminate between Subjacency violations and violations involving one or more UG principles, suggesting that the barriers against ungrammatical wh-extraction have been firmly established. Once learners have acquired wh-movement, they clearly prefer grammatical wh-extraction over ungrammatical wh-extraction. They accept and produce sentences instantiating grammatical movement, overcoming the L1 constraint against object extraction but not the L1 constraint against extraction from DP Objects. However, since even native speakers give lower acceptability ratings to extractions from DP Objects than subject and object extractions, this cannot entirely be ascribed to developmental factors. With continued exposure to the L2, Malay learners also avoid producing UG violations. On the basis of these results, we argue that once the Malay learner has progressed beyond the initial non-movement stage, she acquires wh-movement through the continued accessibility of Subjacency and the ECP.

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Introduction

Within the generative framework, the rapid and successful acquisition of the first language within a remarkably short period of time is attributed to an innate language-specific faculty. This innate language component consists of the principles of Universal Grammar (UG) which are instantiated for the language that the child is exposed to. In second language acquisition, the continued accessibility of UG to the learner is an issue on which conflicting standpoints have been taken. Our main aim is to contribute evidence for the continued accessibility of UG principles to second language learners in the acquisition of a particular syntactic phenomenon: wh-movement.

The issue of the accessibility of UG to L2 learners is crucial to our understanding of the nature of the 'interlanguage', the developing grammar of the L2 learner towards the target language (Selinker, 1972). It determines the extent to which we may consider interlanguage grammars to be natural (UG-constrained) languages and the extent to which these grammars may permit violations of UG principles in their development towards the target language. It also contributes to our understanding of the state of knowledge or competence of the language learner which underlies language performance.

Drawing on a distinction originally made by Krashen (1977), the accessibility of UG also has a bearing on the extent to which L2 languages are 'acquired' as opposed to 'learnt': it is directly related to the extent to which L2 learners unconsciously acquire a language as opposed to consciously applying problem-solving or other cognitive strategies. Thus, the accessibility of UG is closely related to the extent to which we may reasonably expect non-native grammars to approximate that of native speakers. Direct accessibility to UG also influences the ability of learners to overcome L1 influences. Finally, on the assumption that L1 acquisition is constrained by UG, the accessibility of UG in L2 acquisition determines the extent to which we may expect similarities in the developmental route of native and non-native acquisition: the more accessible UG continues to be, the more similarities we may expect.

In considering the continued accessibility of Universal Grammar, we aim not only to establish whether learners possess knowledge of particular UG principles in isolation

but also to assess knowledge of these principles within the developmental context. This is important because the interpretation that we assign to evidence that learners do or do not possess knowledge of particular UG principles is crucially dependent on the status of these principles within the developing L2 grammar. If, for instance, these principles do not apply to the grammatical system that learners possess of the L2, then lack of knowledge of the principles may more accurately be attributed to their lack of relevance rather than to diminished accessibility to UG.

In order to study the continued accessibility of UG to L2 learners, the following steps were taken. Firstly, we selected a particular grammatical subsystem in which there is parametric variation, that is, wh-movement. Secondly, we selected a group of learners whose first language differed from the second with respect to this particular grammatical subsystem. This choice of second language learners was crucial for our purpose because it allowed us to rule out the possibility that the knowledge which these learners demonstrated with respect to the chosen grammatical subsystem may have been transferred from the first language. The learners chosen were Malay learners of English, whose first language differs from English in not instantiating wh-movement at S-structure. In order to obtain a developmental picture of the acquisition of wh-movement, we included subjects from four levels of language proficiency and a control group of native speakers.

We then designed an empirical investigation which aimed to obtain evidence of the underlying knowledge which learners possessed of UG principles. Our investigation consisted of two dimensions: experimental and exploratory. The experimental dimension consisted of the testing of hypotheses which were formulated on the basis of linguistic and pycholinguistic concepts as well as parametric variation in the generation of wh-questions in Malay and English. The exploratory dimension consisted of an investigation into the developmental route of the acquisition of wh-movement by Malay learners of English as evidenced by production data.

Assuming that a clear picture of the underlying knowledge of UG principles is obtained by considering different manifestations of this knowledge, we sought to obtain various forms of evidence which reflect this knowledge. One form of knowledge is the ability to reject violations of UG principles and to accept

grammatical sentences. Another form in which knowledge of UG may be manifested is the ability to demonstrate a preference for grammatical sentences over ungrammatical sentences. Yet another manifestation of such knowledge is the ability to discriminate between UG violations based on the strength of the violation and the number of principles violated. Finally, knowledge of the grammatical subsystem of a second language may be reflected in the ability to produce grammatical sentences in the language. It is however, worth stressing that the inability to produce grammatical sentences should not be taken to imply that learners have not acquired the relevant knowledge.

The convergence of the above forms of evidence forms the basis on which we assess the knowledge of the L2 learners in this study with regard to UG principles which are relevant to wh-movement. From our evaluation of the state of this knowledge within the developmental context, we argue that UG principles continue to be accessible to Malay learners of English in the acquisition of wh-movement. Below, we outline the structure of the thesis.

In Chapter 1, we describe the theoretical foundation of the generative framework, with particular reference to those linguistic concepts which are relevant to the study of the acquisition of wh-movement by Malay learners of English. Chapter 2 reviews the literature on the accessibility of UG principles in second language acquisition with particular reference to the acquisition of wh-movement. In Chapter 3, we provide a contrastive analysis of the generation of wh-questions in Malay and English. Chapter 4 describes the language background of Malay learners of English in Malaysia where our empirical study was carried out. Chapter 5 provides the link between the preceding theoretical chapters and the empirical study: in this chapter, we draw on linguistic and psycholinguistic concepts and the contrastive analysis of Malay and English to formulate our experimental hypotheses. We also describe the basis for our exploratory study of the developmental patterns demonstrated by Malay learners of English in the acquisition of wh-movement. Chapter 6 justifies the experimental methods employed and describes the test materials, the subjects chosen and the administrative procedure of the experimental tasks. In Chapters 7, 8 and 9, we report the results of the rating, ranking and production tasks, respectively. Chapter 10 discusses the results of the rating, ranking and production tasks and argues that UG

principles continue to be accessible in the acquisition of wh-movement by Malay learners of English. Finally, we make a few concluding remarks on the accessibility of UG in second language acquisition in general, appraise our study and suggest possibilities for future research.

Chapter 1

Innate Constraints on the Acquisition of Wh-Movement

Introduction

This chapter describes the linguistic framework which we will use in our study of the second language acquisition of wh-movement. The linguistic theory adopted is the principles and parameters approach. Its twin goals are to provide an account of what constitutes knowledge of language as well as an explanation of how language is acquired. Thus, it aims to provide an account of language that is both descriptively as well as explanatorily adequate. Knowledge of language is described in terms of the underlying basis of all human languages as well as structural differences between individual languages. The explanation of how native languages are acquired relies on the postulation of an innate language acquisition device which is known as Universal Grammar.

The theory of Universal Grammar (UG) is made up of principles, some of which are parameterized for individual languages, which are hypotheses about the initial state of the language acquisition device. On exposure to a particular language, the child is able to 'set' the parameters for the language that she is exposed to. This provides a satisfactory solution to the 'logical' problem in first language acquisition of input underdetermining output; inspite of 'poverty of evidence' and lack of negative evidence, children manage to acquire the language that they are exposed to in a remarkably short time with uniform success rates. UG provides a bridge between the limited data that the child is exposed to and the level of competence that she eventually reaches. The resultant steady state of knowledge or competence that the child achieves is thus the underlying system of the principles of universal grammar that is instantiated by a particular language. In second language acquisition the continued accessibility of UG is a controversial issue which will be discussed in detail in Chapter 2.

The structure of this chapter is as follows. In Section 1, we describe some of the main structural relations and levels of representation. We also discuss the sub-theories which are relevant to the study of the L2 acquisition of wh-movement. In Section 2, we consider wh-movement in terms of its landing site and extraction site in order to

pave the way for our discussion of developmental patterns in the acquisition of wh-movement in Chapter 2, Section 5. We also discuss parametric variation in the level of operation of wh-movement since wh-movement has been argued to be absent at the level of S-structure in Malay. This forms much of the basis on which we explicate the contrasts in the formation of wh-questions between Malay and English in Chapter 3. Section 3 of this chapter outlines UG constraints on wh-movement in terms of the principle of Subjacency and the Empty Category Principle. We will draw on evidence that L2 learners have knowledge of these principles in our argument that they have continued access to UG in the acquisition of wh-movement. Finally, in Section 4, we discuss two theories which account for learnability, the Lexical Parameterization Hypothesis and the Functional Parameterization Hypothesis. We will discuss the relevance of these theories, particularly the latter, in the context of the instantiation of the functional category, Complementizer Phrase (CP) for wh-movement in the L2.

1 Theoretical Framework of the Principles and Parameters Approach

In this section, we discuss the modular nature of the principles and parameters approach, its main levels of representation and some important structural relationships. A principled description of how lexical items are projected at the different levels of representation will also be provided. This will be followed by a discussion of the main sub-theories which are relevant to wh-movement.

1.1 Modular nature of the theory

The theory is modular in that it can be decomposed into a number of sub-theories which interact with each other. These sub-theories include:-

(1) (a) X-bar Theory
(b) Theta Theory
(c) Case Theory
(d) Binding Theory
(e) Bounding Theory

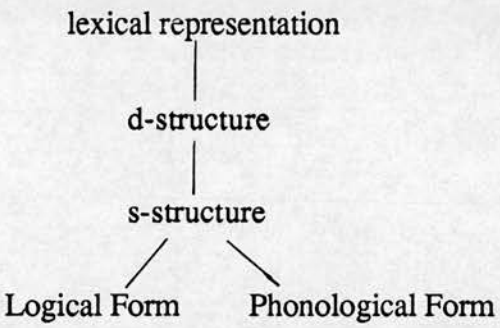
The interaction of the various sub-theories at a given level ensures that a given representation respects all the different requirements on well-formedness. Each of

these theories contain principles which apply to all languages rather than rules which only apply to particular languages.

1.2 Levels of Representation

The overall representation of the grammar is as below:-

(2)



Each of the labels refers to a linguistic level which is linked to the others. Lexical representations (LRs) contain information about the idiosyncratic properties of lexical items. The relationship between lexical representation and the syntactic level of D-structure is one of projection; properties of lexical items, including theta-marking properties are projected from the lexicon into the syntax.[1] To illustrate this, let us consider the following sentence:-

(3) Shakila sauted some onions.

The transitive verb 'sauted' takes two arguments, an Agent 'Shakila' who does the sauting and the Patient 'some onions' which are sauted. This fact about the verb 'sauted' is contained within the lexicon and needs to be learnt by the child. The (partial) LR for sauted is:-

(4) sauted: V; Agent, Patient

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[1] In a different approach referred to as the Minimalist Program (Chomsky, 1992) which is also within the Principles and Parameters framework, linguistic structure mediates between LF and PF. Abstract structures generated by the linguistic system replace the levels of D-structure and S-structure. The abstract structures are spelt out at a level which roughly corresponds to S-structure, spell-out level. Spell out of the abstract structures at this level leads to PF representation. Syntactic structures are also semantically interpreted at a level which corresponds to LF.

To specify how this representation is projected into the syntax, we need to consider the categorial status of the projected arguments, which in the above example is NP.

In addition to categorial selection, the configurational status of the argument is also required in order to project LRs onto the syntax. The configurational status of the argument determines whether they are projected as external arguments or internal arguments. Internal arguments are projected into the maximal projection of the predicate in this case, the Verb Phrase (VP) of the Verb (V) 'sauted'. External arguments are projected outside this maximal projection.

The mapping between syntactic levels of D-structure to S-structure is determined by a general rule Move Alpha. This rule states that anything can move anywhere; it is constrained by various principles to prevent overgeneralization. For example, in the schematic structure:-

(5) Shakila [VP sauted what]

Move alpha produces the following schematic S-structure:-

(6) What did Shakila saute?

This movement leaves behind a coindexed empty category (e) in the VP internal position, indicating the D-structure of the moved item. Thus, the schematic structure of (6) is (7):-

(7) What$_i$ did [S Shakila [VP saute e$_i$]]

S-structures are phonologically represented at the level of Phonological Form which is also known as the level of spell-out. Empty categories are phonologically null. The level of Logical Form represents the interpretational component of the grammar. It represents the scope of operators such as quantifiers and wh-constituents.

To ensure that the four levels are properly related to each other for a given sentence, a fundamental principle must be satisfied. This is the Projection Principle:-

(8) Representations at each syntactic level are projected from the lexicon in that they observe the subcategorization properties of lexical items.

(Chomsky, 1981:29)

One of the important consequences of the Projection Principle is that Move alpha leaves behind a coindexed empty category or trace as was observed in (7). The moved element and its trace are said to form a 'chain'; the trace marks the root position of the chain while the moved element marks its head position. In wh-questions generated by wh-movement at S-structure, the moved wh-element is coindexed to a wh-trace. Thus, a chain in S-structure reflects the position of its elements in D-structure.

1.3 Structural Relationships

The theory relies heavily on a few structural relationships. These relationships essentially impose a locality condition on various relations. One of these relationships is c-command:-

(9) **C-Command**
Node A c-commands node B if and only if:
(a) A does not dominate B and B does not dominate A;and
(b) the first branching node dominating A also dominates B.
(Reinhart, 1981)

We shall see that the relationship between wh-elements and their coindexed wh-traces is one of c-command. When the node A is interpreted as a maximal projection, A m-commands B. Using the concept of m-command, government is defined as follows:-

(10) **Government**
A governs B if and only if:
(a) A is a governor;
(b) A m-commands B; and
(c) no barrier intervenes between A and B.
Maximal projections are barriers to government.
Governors are heads.

It will be noted from the above that government is a stricter definition than m-command. The notion of government is also central to the licensing condition for the

distribution of traces in relation to their moved elements or antecedents. This is expressed in the Empty Category Principle (ECP). One definition of the Empty Category Principle is as follows:-

(11) **Empty Category Principle** (i)
(a) Traces must be properly governed.
(b) A properly governs B if and only if A theta-governs B or A antecedent-governs B.
A theta-governs B if and only if A governs B and A theta-marks B.
A antecedent-governs B if and only if A governs B and A is coindexed with B.
(Chomsky, 1986b: 17)

In Section 3.2, we will consider more recent formulations of the ECP.

1.4 X-bar Theory

The projection of lexical items from the lexicon into the syntax is also constrained by schematic 'X-bar' well-formedness conditions on phrase markers. Following Chomsky, (1986a), the basic lexical categories are nouns, verbs, adjectives and prepositions and the functional categories are Inflectional Phrases (IP) and Complementizer Phrases, (CP). The head of the Inflectional Phrase is INFL while the head of the complementizer Phrase is COMP. INFL is a closed class of non-lexical items which dominates tense features (TNS) and agreement features (AGR) of a sentence, such as verbal inflection, infinitival 'to', aspectual auxiliaries and modals. Hence, its projection, IP is sentence-internal. COMP is also a closed class of lexical items which dominates the complementizer or, in sentences with subject-auxiliary inversion, the auxiliary, as in yes-no questions and wh-questions.

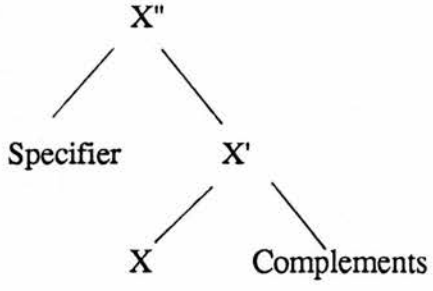
According to Chomsky, the heads of lexical and functional categories project to higher level phrasal categories according to the following schemata:-

(12) **The X-bar schema**
XP = YP*, X'
X'= YP*, X

where X can be any of the category types and order is a matter of cross-linguistic variation. YP* stands for zero or more occurrences of a second level projection (or a maximal projection) and X is a lexical or functional head. The internal structure of

phrases may thus have the following schema represented in (13):-

(13)



where X is the head, the phrasal category containing X is X' and the phrasal category containing X' is X". The categories that are sisters to the head X and the daughters of X' are its complements. Specifiers are the sisters of X' and the daughters of X". Chomsky postulates that only second level projections, that is, maximal projections, function in the specifier and complement positions.

1.5 The Complementizer Phrase

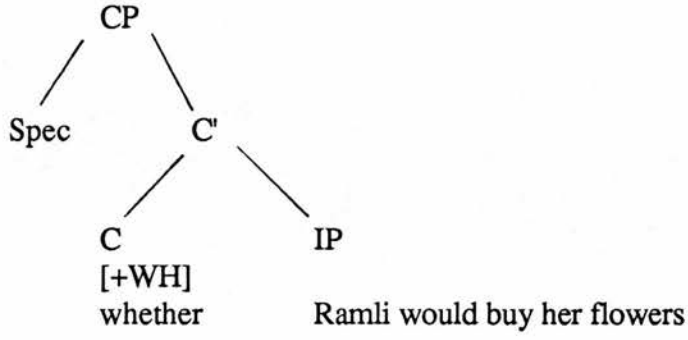
For our purpose of studying the acquisition of wh-movement in L2 learners, the structure of the Complementizer Phrase is particularly important. We will consider the domination of its head, COMP in subordinate clauses, yes-no questions and wh-questions.

1.5.1 Subordinate Clauses

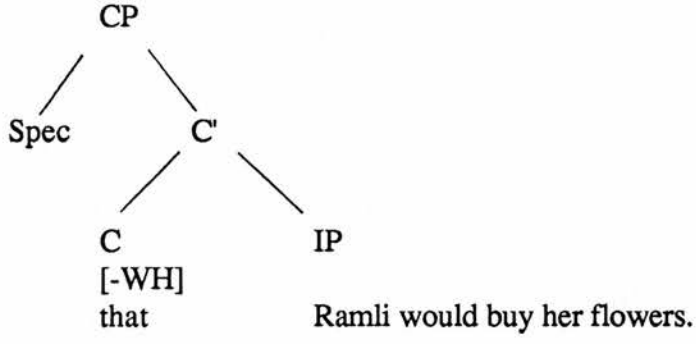
In English, there are four complementizers which are found in subordinate clauses, 'that', 'if', 'whether' and 'for'. 'That' and 'if' select finite clauses, 'for' selects an infinitival clause and 'whether' selects either type of clause. Subordinated clauses may be characterised according to whether they are interrogative or declarative clauses. Complementizers which head interrogative clauses have the feature [+WH] while non-interrogative or declarative clauses are headed by complementizers with the feature [-WH]. Some verbs, such as 'wonder' select interrogative clauses while other verbs, for example 'hope' and 'say' select non-interrogative clauses. In Chapter 2, Section 5, we will see that learners have to learn the subcategorization properties of verbs before they produce sentences with subordinate clauses. The interrogative clause is

represented in (14), while the non-interrogative clause is represented in (15):-

(14)



(15)



In Chapter 2 Section 5.2.2, we will discuss whether it is necessary for learners to realize the lexical complementizer at the level of spell-out before they acquire long distance wh-movement. We will also discuss the possibility that null elements may occupy the complementizer position which heads the subordinate clause.

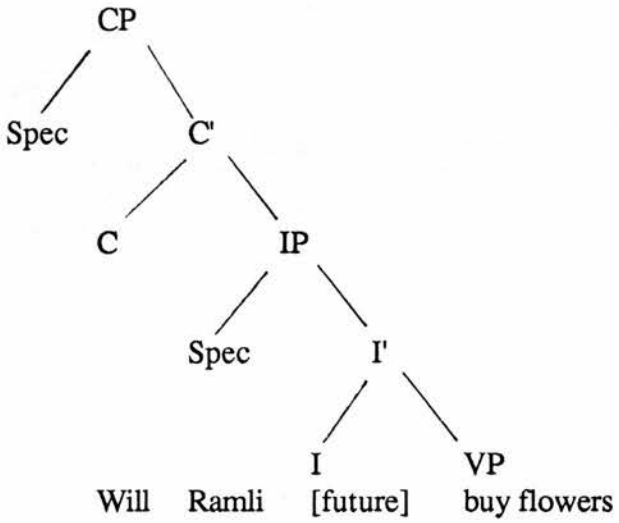
1.5.2 Subject Auxiliary Inversion

In this section, we consider the inversion of the auxiliary over the subject in yes-no questions and wh-questions.

1.5.2.1 Yes-No Questions

In yes-no questions, the auxiliary moves from the head of IP to the head of CP.

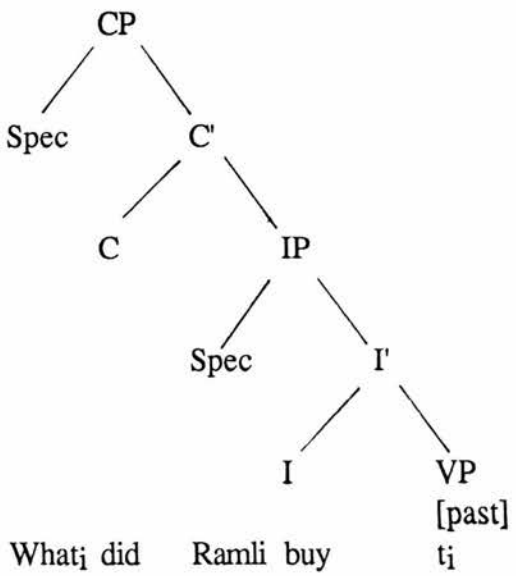
(16)



1.5.2.2 Wh-Questions

In wh-questions, the auxiliary moves from INFL into C while the wh-element is moved from within the sentence internal position (IP) to the position preceding C, that is, Spec, CP. According to Rizzi (1991) cited in Roeper (1992) 'Agreement of wh-features in the CP is obligatory.' In other words, the wh-feature in Spec, CP must be licensed by an agreement-marked auxiliary in C (see also Fukui, 1986).

(17)



In Chapter 2, we will note that in early wh-questions in L1 and L2 acquisition, subject auxiliary inversion is absent; both the child and the L2 learner have to determine the path of movement of the auxiliary as well as its destination. They also have to acquire the appropriate agreement-marked auxiliary in order to produce target wh-questions. We will note that the emergence of the appropriate auxiliary in matrix COMP position is acquired late, relative to other manifestations of CP.

1.6 Theta Theory

Theta roles have been described above in terms of semantic roles such as Agent and Patient. Theta Theory aims to make explicit the principles which determine the projection of lexical heads and their selected theta-roles into the syntax. This has already been articulated in the Projection Principle. As seen above, the verb 'sauted' selects two theta-roles as a lexical property so that (18) in which only the external role is assigned and (19) in which only the internal role is assigned are both ill-formed.

(18) *Shakila sauted

(19) * Sauted the onions

The theory adopted here is outlined by Chomsky (1981) but further developed by Sproat (1985) and Stowell (1981). According to Stowell, a thematic grid (theta grid) is associated with each lexical item and it determines the number and nature of the arguments a lexical item can (or must) take. To ensure that the correct NPs get matched up with the correct theta roles, the fundamental criterion of Theta Theory, the Theta Criterion must be satisfied:-

(20) **The Theta Criterion**
(a) Each argument bears one and only one theta role
(b) Each theta role is assigned to one and only one argument
(Chomsky, 1981)

This can be thought of as a condition on chains. A theta-role is assigned to a specific position and a chain may bear only one theta role. The assignation of theta-roles to a constituent is known as theta-marking. Traditionally, potential theta positions are known as A-positions. A-positions are usually Spec, IP and the NP dominated by V'.

A'-positions are those positions which are not A-positions and may not be potentially assigned a theta role. Usually, Spec, CP is seen as an A'-position. The wh-chain is thus seen as an A'-chain in which the wh-trace is linked to the wh-element in Spec, CP position.

1.7 Case Theory

Case Theory is concerned with the mechanisms by which NPs are assigned abstract Case features. The central principle of Case Theory, the Case filter is the assumption that all non-empty NPs require case, such that:-

(21) *NP if NP has phonological content and has no Case.

(21) stipulates that all overt NPs appearing at the level of Phonological Form must occupy positions which can be assigned Case. Consequently, if an NP is not Case-marked at D-structure, it must be moved to a position in which it can be assigned Case at S-structure. The link between movement and Case assignment is articulated in the Chain Uniqueness Principle formulated by Radford (1988:580) as:-

(22) Each movement chain carries a unique set of grammatical features (a single chain, a single theta role etc.)

Accordingly, only one link of a chain receives Case which is transmitted to the whole chain. In the case of wh-movement, we adopt the idea that the wh-trace is Case-marked and that the antecedent of the chain in Spec, CP position is not Case-marked (Haegemann, 1991).

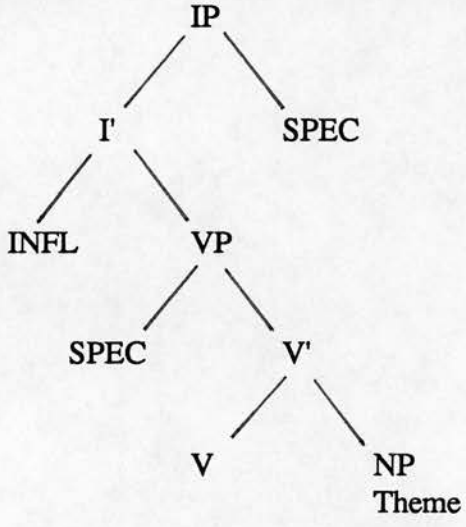
In order to receive Case, NPs have to be assigned Case by a class of Case assigners under government. The governors in English are nouns, verbs, adjectives, prepositions and finite INFL (Agr). However, the class of Case-assigners are more restricted than the class of governors with only verbs, prepositions and finite INFL (Agr) being able to assign Case in English. V assigns objective Case to its complement whereas P assigns oblique Case to its complement and finite INFL (Agr) assigns nominative Case to the subject position. The application of Case Theory to wh-questions will be illustrated in Section 2.2 where we discuss the properties of the wh-trace.

Following Fukui (1986), it is useful to think of Case-assigning elements as having a Case grid, analogous to a theta grid. The Case filter has been said to follow from the Visibility Condition which states that an element bearing a theta role must be 'visible'. In other words, an NP can only be assigned a theta role if it is assigned a Case feature. Case Theory and Theta Theory then, are to an extent interdependent.

1.8 VP-Internal Subject Hypothesis

In recent years, the uniformity of the X' bar system of phrase structure has led to the postulation of two subject positions (Kuroda, 1988; Kitigawa, 1986; Fukui and Speas, 1986; Koopman and Sportiche, 1988; Guilfoyle, Hung and Travis, 1992). This has been formulated in terms of the VP-Internal Subject Hypothesis. Crucially, the hypothesis proposes that subjects are base-generated within the projection of the verb phrase and raised to Spec, IP position at S-structure. This is represented in (23):-

(23)



Since Spec, IP position receives Nominative Case from INFL at S-structure, this position is filled by the VP internal subject in order to avoid violating the Case filter. However, Kuroda, Kitigawa and Koopman and Sportiche all allow for parametric variation in whether or not subject raising is obligatory in all languages; in some languages, subjects may remain within the VP at S-structure. Additionally, Guilfoyle, Hung and Travis suggest that in some languages, both Spec, IP and Spec, VP may be filled at S-structure. In Chapter 2, Section 5.1.1.1 we will see that children's failure to

raise the subject has been used to account for the employment of wh-element adjunction in early wh-questions.

1.9 Binding Theory

Binding Theory regulates the referential properties of noun phrases (NPs). Three types of NPs may be distinguished:-

(24) (a) full noun phrases such as Shakila, Ramli
(b) pronouns such as she and her etc.
(c) reflexive anaphors such as herself etc.

Unlike full noun phrases, reflexive anaphors and pronouns receive their referential interpretation through being coindexed with other expressions. Reflexive anaphors differ from pronouns in being bound by an antecedent or governor. The relationship between a reflexive and an antecedent is necessarily one of c-command which we defined in (8): the antecedent must c-command the reflexive. The 'governing category' of a reflexive anaphor may be informally defined as the smallest category containing the anaphor, its governor and a subject. In contrast, pronouns can be interpreted as coreferential with entities outside the sentence it is in, either in a previous sentence in the discourse or to a contextually specified referent.[2]

Binding theory is essentially a theory which concerns Noun Phrases (NPs) in A-positions; as such it is a theory of A-binding. It consists of three principles each of which describes the distribution and interpretation of each of the types of NPs in (24). Principle A regulates the interpretation of anaphors, Principle B, the interpretation of pronouns and Principle C, the distribution of referential expressions like the NPs in

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2 Huang (1984) proposes that genuine pronominals are subject to Principle B of Binding Theory (defined in (25)) as well as the Generalized Control Rule for their reference. The latter is defined in (i):

(i) Generalized Control Rule
Coindex an empty pronominal with the closest nominal element where a nominal element can either be an NP or an AGR and closeness is defined in terms of c-command.
These constraints rule out the possibility of a null pronominal in object position. This will be illustrated in Chapter 3, Section 2.2.2 .

(25) **Principle A**
An anaphor must be bound within its governing category
Principle B
A pronoun must be free in its governing category
Principle C
An R-expression must be free everywhere.

Chomsky (1982:78-79) proposes that the three types of NPs defined above are not primitives but can be split into smaller units, so that they may be represented by the following feature matrix:-

(26) Anaphors [+Anaphor,-Pronominal]
Pronouns [-Anaphor, +Pronominal]
R-expressions [-Anaphor,-Pronominal]

Anaphors and pronouns do not share any features at all. R-expressions are like anaphors in that they are both [-Pronominal] and like pronouns in that they are both [-Anaphor]. In Section 2.2.3, we will see that wh-trace is [-Anaphor, -Pronominal] and conforms to Principle C. This distinguishes wh-trace from pro [-Anaphor, +Pronominal] which conforms to Principle B. We will draw on the characteristics which differentiate pro from wh-trace in Chapter 2 when we discuss whether learners perceive the empty category in wh-questions as trace or pro. This is important because it is only in wh-questions which are generated by movement that the empty category is wh-trace. This will be made clearer in Section 2.2.3 of this chapter where we consider the properties of the wh-trace and the consequences of these properties in more detail.

1.9.1 The Null Constant

Recently, Rizzi (1994) following Lasnik and Stowell (1991), has postulated the presence of another empty category. This is the null constant bound to a clause-external antecedent in the discourse. The null constant is [-anaphor, -pronominal, -variable]. Based on the idea that the feature system [<±a>, <±p>, <±v>] only defines empty categories in A-position, Rizzi suggests that it is possible that the null constant

may exist when the specifier of a root[3] is in an A-position but not when the specifier is in A'position. Thus, null constants may coexist with a wh-element which is adjoined to Spec, IP position which is an A-position (see Section 2.1.2.2) but not when the wh-element is in Spec, CP position which is an A' position. In other words, null constants would only appear in wh-questions which do not instantiate CP for movement. In our discussion of the developmental patterns observed in L1 and L2 acquisition of wh-movement in Chapter 2, Section Five, we will suggest that the identity of the empty category in early wh-questions may be null constant: this supports our argument that early wh-questions are not generated by movement.

The null constant shares certain characteristics with the other empty categories, wh-trace and pro. It is like the wh-trace, in being [-anaphor, -pronominal] (see Section 2.2.3) and an R-expression which is subject to the ECP (see Section 3.2). However, it is unlike the wh-trace in that it is not a variable which is bound by an overt operator or subject to the principle of Subjacency (See Section 3.1). With pro, the null constant shares the property of not being a variable (see Section 1.8). However, unlike pro, it shares the properties of wh-traces of being subject to the ECP and of being -pronominal. In Chapter 2, these differentiating properties of the null constant, pro and the empty category will be drawn upon in our discussion of how learners perceive the empty category in early wh-questions.

2 Wh-Movement

We have already briefly considered wh-movement as an exemplification of domination by COMP. In this section, we discuss the landing and extraction site of wh-movement. This will allow us to consider developmental patterns in the L1 and L2 acquisition of wh-movement in Chapter 2, Section 5.1. We will also consider parametric variation in the level at which wh-movement takes place. This will pave the way for our description of parametric variation in the generation of wh-questions in Malay and English in Chapter Three.

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[3] Rizzi suggests that in the adult grammar, the root of the sentence is CP whereas in child grammar the root may be IP.

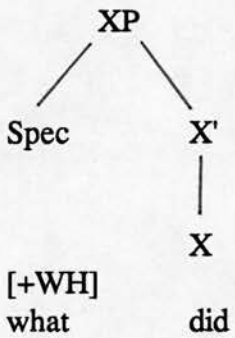
also describe parametric variation in terms of whether or not wh-movement proceeds through substitution or adjunction.

2.1.1 Wh-Phrases

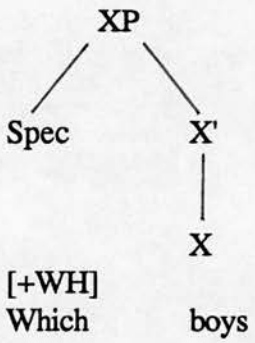
The constituents which undergoes movement in wh-questions includes noun phrases as in (27a) and (b) and prepositional phrases as in (27c). These are schematically represented in (28), (29) and (30), respectively.

(27) (a) What did Zaid buy?
(b) Which boys does Mary like?
(c) With what hair does Mary like boys?

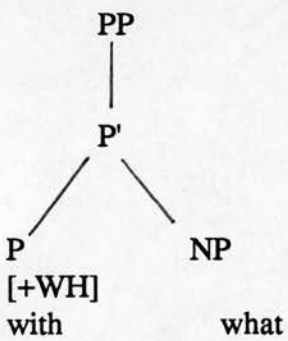
(28)



(29)



(30)



Each of these representations show that the interrogative word is specified by the feature [+WH]. If the word is the head of a phrase, the phrase will also be specified as [+Wh]: the [+WH] feature *percolates* from the specifier position of the phrase to the maximal projection, as in (28) and (29). In (30), the [+Wh] feature of the NP percolates to the PP. The phenomenon in (30) in which the preposition and the

complement are moved to sentence initial position is known as pied-piping. When the complement of a preposition is moved to sentence initial position leaving the preposition behind, the preposition is said to be stranded; this phenomenon is known as preposition-stranding. It is exemplified in (31):-

(31) What does Mary like boys with?

Thus, the choice of the wh-phrase may determine whether the preposition is pied-piped or stranded (cf. Chomsky, 1986b). In English, pied-piping is common while preposition-stranding is restricted. Van Riemsdjik (1978) found that preposition-stranding is typologically rare and only permitted in a few Indo-European languages. In Chapter 2, Section 5.1.5, we will discuss the relative ease of acquisition of both forms of prepositional phrase extraction in L2 acquisition.

2.1.2 Parametric Variation in the Operation of Wh-Movement

Haegemann (1991) argues that there may be parametric variation in whether wh-movement operates through substitution or adjunction. In the former, the wh-phrase moves to an unoccupied site, Spec, CP whereas in the latter, it is adjoined to IP. Both the substitution and adjoined positions of wh-movement are A'-positions in that traditionally, these are not positions to which a theta role can be assigned. In English, it is standardly assumed that wh-movement proceeds through substitution (see Section 2.1.2.1) whereas in languages such as Polish, wh-movement may operate through adjunction (see Section 2.1.2.2.). In Section 2.1.2.3, we will see that one consequence of this parametric variation is the constraint of the doubly filled COMP filter which is present in English but absent in Polish.

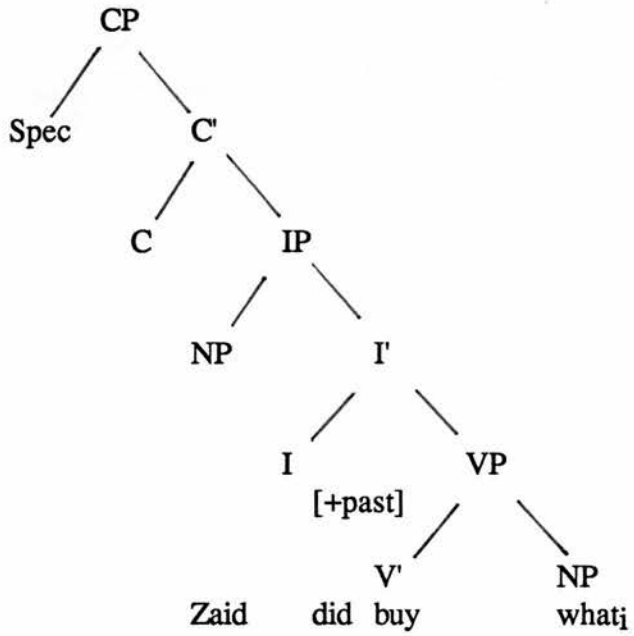
2.1.2.1 Substitution

Wh-movement which proceeds through substitution may be categorised as either local movement or long distance movement. This study will include the acquisition of both local and long distance wh-movement.

2.1.2.1.1 Local Movement

In local movement, the wh-element moves to Spec, CP position within its own clause. Local movement is represented in (32):-

(32)



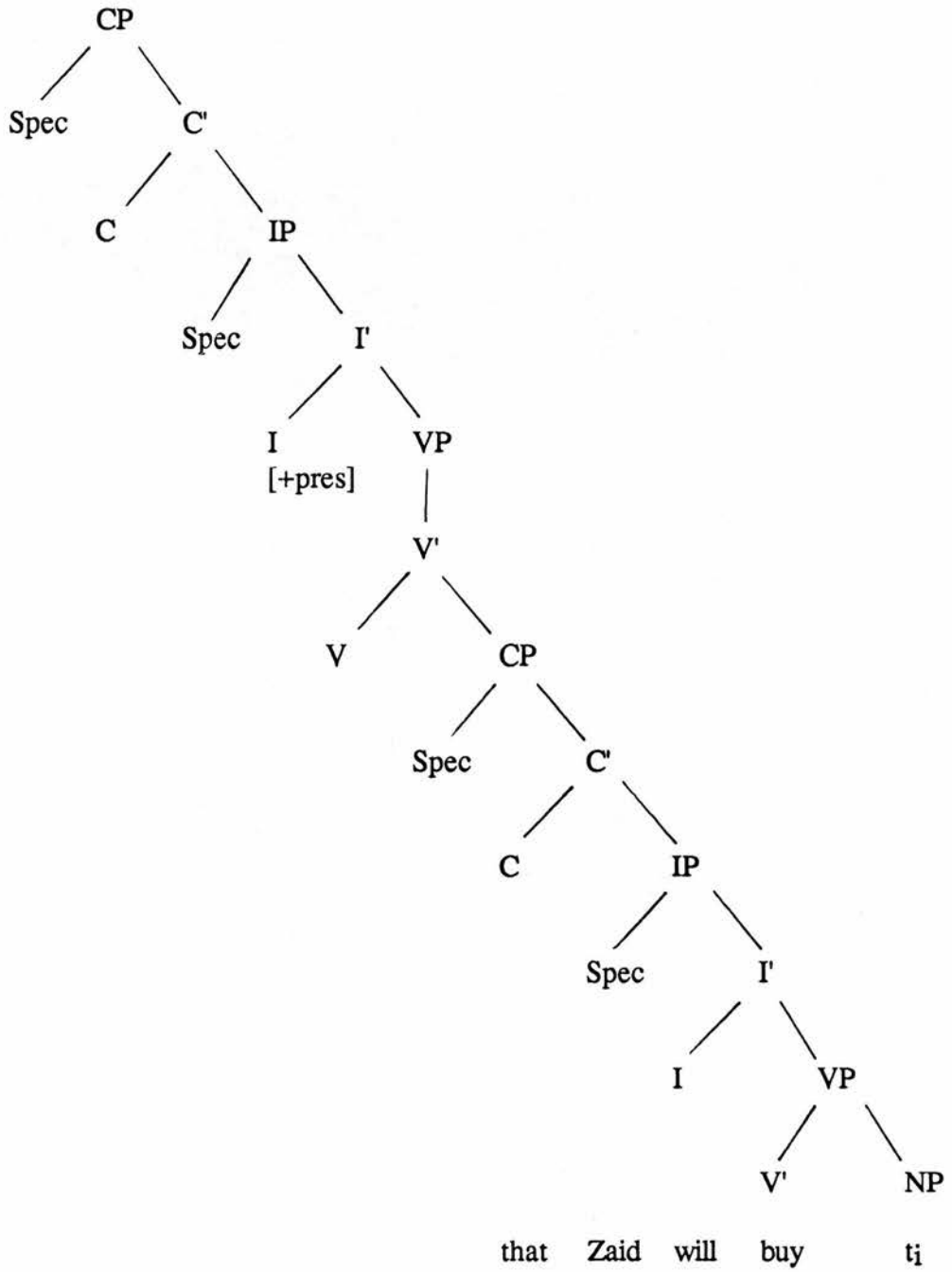
At S-structure 'what' is moved to the Spec, CP of the clause leaving behind a coindexed trace in its base-position. The auxiliary 'did' which carries tense and agreement features from I is moved to C resulting in:-

(33) [$_{CP}$ What$_i$ did [$_{IP}$ Zaid buy t_i]]?

2.1.2.1.2 Long Distance Movement

In long distance movement, the wh-element is moved from its base-position within the embedded clause to the Spec, CP position of the matrix clause in sentence initial position. Since wh-movement applies successively in each clause, such movement is also known as successive cyclic movement. As in local movement, the auxiliary 'do' carries the features of tense and agreement from I to C, fulfilling 'do' support. The resultant structure is:-

(34)



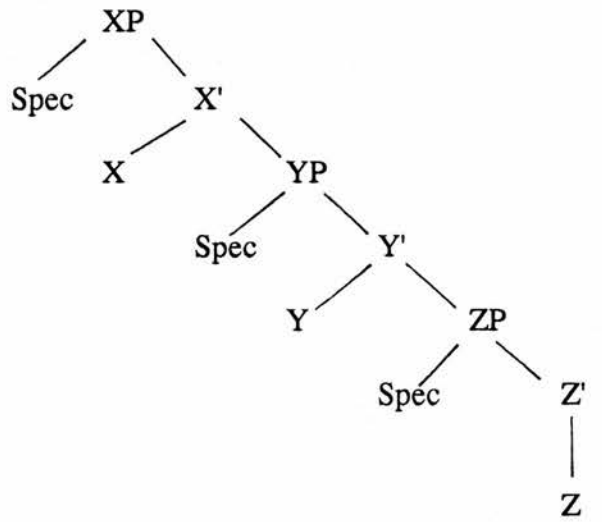
[CP What$_i$ does [IP Sue hope [CP that [IP Zaid will buy t_i]]]]?

It will be noted that in both (32) and (34), the wh-element C-commands its trace: since the wh-trace is bound by the wh-phrase in Spec, CP position, an A'-position, the wh-trace is considered to be A'-bound.

2.1.2.2 Adjunction

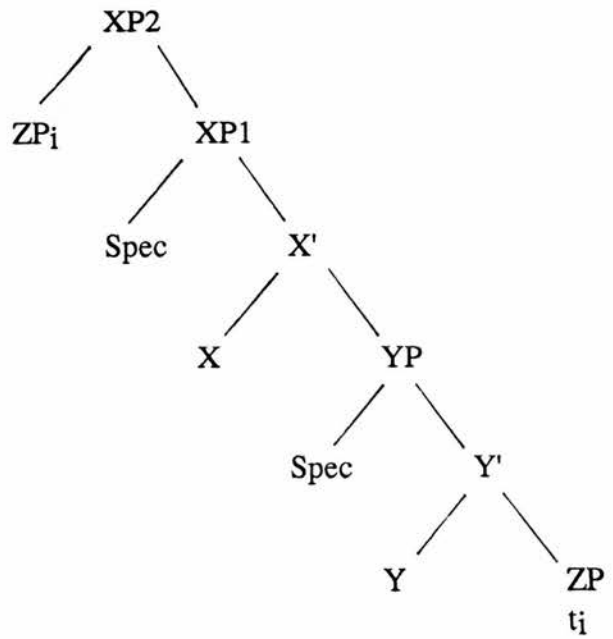
Adjunction is a means of appending additional structure to a structure which already exists. The wh-phrase may either be base-generated or adjoined through movement. We will consider how the constituent ZP may be moved to sentence initial position when there is no unfilled position which it may occupy.

(35)



One means of adjoining ZP to sentence initial position is represented in (36):-

(36)



The highest node in the original representation, XP is now XP1. It is called the base maximal position. It is dominated by the new node, XP2 which is now the highest node. ZP is moved from its base-position and attached to XP2 by the process of adjunction. Considering the relationship between XP and ZP more closely, we see that the highest maximal projection XP2, dominates the adjoined constituent, ZP and the base maximal position XP1. ZP is only dominated by the highest maximal projection and not the base maximal projection. Thus, it is not completely within the projection of X but only partly so. Let us consider the status of ZP in terms of the concept of dominance formulated by Chomsky (1986a) and based on May (1985):-

(37) **Dominance**
A is dominated by B only if A is dominated by every segment of B.

Since ZP is only dominated by XP2 and not XP1, we cannot say that ZP is dominated by every segment of X. However, since it is dominated by one of the segments of X, XP2, we cannot say that it is excluded from X, where exclusion is formally defined as:-

(38) **Exclusion**
B excludes A if no segment B dominates A.

In contrast, the lower node YP is wholly included within the projection of X.

In this section, we have considered possible parametric variation in whether wh-elements are adjoined to Spec, IP position or whether they fill Spec, CP position by substitution. In Chapter 2, we will discuss the possibility that early wh-questions are formed by adjunction of the wh-element to sentence initial position. It will also be suggested that adjunction is one of the primary means of appending new mechanisms to existing grammars in L1 and L2 acquisition. One consequence of wh-movement by substitution in English is the Doubly filled COMP filter. We will see that this constraint does not apply in languages in which wh-movement may proceed through adjunction.

2.1.2.3 The Doubly filled COMP filter

In English, the wh-element may not occupy embedded Spec, CP when C is filled by an overt complementizer. This constraint is formally expressed in (39):-

(39) **Doubly filled COMP filter**
When an overt wh-phrase occupies the Spec, CP of some CP the head of that CP must not dominate an overt complementizer.

This accounts for the relative well-formedness of the following sentences:-

(40) Siti wondered which dress Zaid had bought for whom.

(41) * Siti wondered which dress for whom Zaid had bought.

(40) is well formed since only one wh-phrase fills Spec, CP position while (41) is ill-formed since two wh-phrases fill Spec, CP position. Neither of these wh-phrases would be able to fill C position since C is a head position and only heads may move to a head position. Thus, multiple wh-movement is not possible in English. In contrast, Polish allows multiple wh-movement. This difference may be accounted for in an adjunction analysis of wh-movement in Polish: one wh-phrase is adjoined to IP while the other which precedes it, is moved to Spec, CP.

2.2 Site of Extraction

We have already discussed the site of extraction in terms of the coindexed trace which is left behind by the wh-element when it moves to Spec, CP position. We will now consider the properties of the wh-trace in more detail.

2.2.1 Case-marking

In (42) and (43) the case-assigner of finite I and transitive verb respectively do not govern the wh-element but they do govern the trace which is left behind.

(42) Who$_i$ does Mrs. Lim hope t_i will go to school?

(43) What$_i$ do you think that Zaid will buy t_i?

The case-marked traces make the theta positions visible, allowing theta roles to be assigned.

2.2.2 Behaviour with respect to Binding Theory

In Section 2.2.1, we observed that traces fill a position which is usually filled by a noun phrase. It receives case-marking from a verb and is also assigned a theta role. If these wh-traces are NPs, then it is important to consider how they may be classified in the typology of NPs in Binding Theory discussed in Section 1.9. Since the wh-trace is not A-bound by anything in its governing category, it is not like an anaphor. The alternative is that it could be a pronominal, like 'he' in (44):-

(44) The teacher$_i$ thinks [that [$_{IP}$ he$_i$ teaches Literature best.]]

But if that were the case, then the trace in the sentence in (45) would be coreferential with 'the teacher':-

(45) Who does the teacher$_i$ think [t'$_i$ [$_{IP}$ t$_i$ teaches Literature best?]]

Since the wh-trace t$_i$ in (45) is not coreferential with 'the teacher' it does not function like a pronominal. The last option is that it could be like an R-expression, which is free everywhere. The sentence in (45) verifies that the wh-trace indeed fits this alternative. The wh-trace is thus [-Anaphor, -Pronominal] and an R-expression. Thus, it conforms to Principle C of Binding Theory. In Chapter 2, Section 5.2.1.1 and 5.2.1.2 we will discuss evidence which suggests that children and L2 learners do not appear to be analysing the empty category in wh-questions in which the wh-element is coindexed to an empty category in the embedded clause as wh-trace. In L1 acquisition, much of this evidence is obtained through testing children's sensitivity to strong crossover described below.

2.2.2.1 Strong Crossover

It has been noted that wh-traces cannot be coindexed with pronouns to their left.

(46) *Who$_i$ does she$_i$ think t$_i$ arrived?

The ungrammatical sentence in (46) is an instance of strong cross-over. Cross-over refers to the movement of a wh-element across a coindexed pronoun. This ungrammaticality can be accounted for in terms of Binding Theory in that the wh-trace is A-bound, instead of A' bound. However, if the empty category is treated as pro which is subject to Principle B, coreference relations will be made between the wh-element, the pronoun and pro as in (47):

(47) Who$_i$ does she$_i$ think pro$_i$ has arrived?

As we will discuss further in Chapter 2, Section 5.2.1.1, evidence that children and L2 learners do make such coreference relations may be used to suggest that the empty category is not wh-trace and implicitly, that wh-questions in their grammar are not generated by wh-movement.

2.2.2.2 Weak Crossover

An instance of weak crossover is seen in (48):-

(48) * Who$_i$ does his$_i$ wife love t$_i$?

This is seen as a weaker violation than strong crossover. In contrast to (46) the trace in (48) is not A-bound; the pronoun 'his' does not c-command the trace and hence does not bind it.

2.3 Parametric Variation in the Level of Operation

In English, wh-movement is obligatory in that it enables the wh-element to acquire scope over the CP in which it is found. From its sentence initial position in Spec, CP, wh-phrases have interrogative scope over the CP whose specifier position it occupies. The wh-element has operator-like properties in that it binds a variable, the sentence internal empty category, wh-trace. However, in other languages, such as Chinese and Japanese, wh-movement at S-structure is not obligatory; there is no overt movement of the wh-element. Chomsky (1986b) suggests that in these languages too, wh-phrases possess operator-like properties and move to scope position at the level of Logical Form. Accordingly, parametric variation with regard to wh-movement may reside not so much in its presence or absence in natural languages but in its operation

is present at S-structure is known as syntactic movement or overt movement while wh-movement at LF is referred to as covert movement.[4] In Chapter Three, we will argue that unlike English, in Malay, wh-movement is not instantiated at S-structure. We will then discuss the consequences which follow from this fundamental difference in relation to the UG principles which constrain wh-movement at S-structure. These are discussed in Section 3 below.

3 UG Constraints on Wh-Movement

Constraints on wh-movement will be discussed in terms of the principles of Subjacency and the Empty Category Principle. The former constrains the range over which wh-movement is permitted while the latter relates to the coindexed traces which are left behind at the site of extraction. Thus, the former relates to the domain of extraction while the latter relates to the type of element which is extracted.

3.1 Subjacency

Wh-movement is constrained by the principle of Subjacency.[5] Essentially, Subjacency constrains the elements over which a wh-element may move.[6] Within the barriers framework (Chomsky, 1986b), Subjacency is formally stated as follows:-

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[4] In languages without overt movement such as Chinese and Japanese, it has been observed that wh-questions do not observe the constraints of Subjacency (Huang, 1982; Lasnik and Saito, 1984). This may be accounted for under the standard assumption that Subjacency does not constrain LF applications of Move alpha.

[5] Subjacency was first formulated by Chomsky (1973) who argued that many of the constraints proposed on movement in Ross (1967) such as the Wh-Island Constraint and the Complex Noun Phrase constraint could be subsumed under a single overarching principle. The principle was first formulated in terms of bounding nodes as follows:-

Movement cannot cross more than one bounding node, where bounding nodes are S and NP.

In the framework we have adopted, S corresponds to IP.

[6] Rizzi (1982) proposed parametric variation in the choice of bounding nodes for Subjacency: in English, IP and NP are bounding nodes whereas in Italian, CP and NP are bounding nodes.

(49) **Subjacency condition**
Movement must not cross over more than one barrier.[7]

In order to lead towards a definition for barrierhood, it is first necessary to define a blocking category (BC). The definition of a blocking category in turn depends on L-marking.

(50) **L-marking**
A L-marks B if and only if A is a lexical category that theta-governs B.
(Chomsky, 1986b:15)

(51) **BC**
C is a BC for B if and only if C is not L-marked and C dominates B.
(Chomsky, 1986b:14)

(52) A is a barrier for B if and only if (a) or (b):
- (a) A is a maximal projection and A immediately dominates C, C is a blocking category for B.
- (b) A is a BC for B, A is not IP.

The notion of government has been redefined in the Barriers model as follows:-

(53) **Government**
X governs Y if and only if
- (a) X is either of the category A, N, V, P, I;
  or
  X and Y are coindexed
- (b) X c-commands Y.
- (c) No barrier intervenes between X and Y;
- (d) minimality is respected.

(54) **Minimality Condition on government**
There is no Z such that Z satisfies (a), (b), (c) and X c-commands Z.

This definition of government allows for two types of government, head and antecedent-government. The minimality condition on government ensures that of two potential governors for Y, the one which is closer to Y governs it.

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[7] Within the Barriers framework, nodes such as IP are only a barrier against wh-movement under certain circumstances. In addition, NP is also no longer regarded as a primitive bounding node against wh-movement since certain NPs may subcategorize for sentential complements.

3.1.1 Condition on Extraction Domains

Huang (1984) proposed that extraction is only possible if the domain is governed by the matrix verb. One consequence of this is that extraction from DP and CP subjects is prohibited in SVO languages, such as English.

(55) Books about Science interest Ali.

(56) *What do books about t interest Ali?

(57) That Sheila liked pop songs surprised John.

(58) *What did Sheila like t surprised John?

Within the Barriers framework, the Condition on Extraction Domains is subsumed under the principle of Subjacency in that two invariant barriers are crossed (1986b:31). In Chapter 2, Section 3.2 we will discuss learners' ability to discriminate between violations of the Condition on Extraction Domains and grammatical extraction in our argument that L2 learners continue to have access to UG Principles related to wh-movement once this has been acquired.

3.1.2 Subjacency as a Diagnostic for Movement

Since Subjacency is a constraint on wh-movement, whenever the relationship between an empty position and its antecedent is subject to Subjacency, it may be concluded that wh-movement has taken place and that the empty category is a wh-trace. As a corollary to this, whenever it can be demonstrated that the link between an empty category and its antecedent is not subject to Subjacency, we may conclude that wh-movement has not taken place and the empty category is not a wh-trace. Accordingly, if the relationship between the relative pronoun in Spec, CP position and the gap after 'written' in (59) conforms to Subjacency, we may conclude that wh-movement is involved in the formation of the relative clauses.

(59) I know [$_{NP}$ the book$_i$ [$_{CP}$ which [$_{IP}$ Joan has written t_i]]]].

In Chapter 2, Section 1, we will discuss learners' conformity to Subjacency as a diagnostic for the acquisition of wh-movement. In Chapter 2, Section 5.1.4, we will also suggest that since wh-movement is involved in the formation of relative clauses,

some of the developmental features found in early relative clauses may also be found in early wh-questions. In contrast, in the relative clause below which is found in some non-standard dialects:-

(60) the book which$_i$ Rita read it$_i$

the potential gap position is filled by what is known as a resumptive pronoun, in this case, 'it'. Since there is no gap which is linked to the wh-pronoun 'which', we can assume that wh-movement is not involved. The filling of the gap by a resumptive pronoun avoids what may otherwise constitute Subjacency violations, as illustrated in (61):-

(61) The job which$_i$ [IP John thinks [CP that [IP [CP when [IP he gets it$_i$]] then he will be happy]]].

Since the resumptive pronoun 'it' does not move, we must assume that the wh-element, 'which$_i$' is base-generated in Spec, CP position and that wh-movement is not involved. In Chapter 2, Section 5.1.4, we will use the presence of resumptive pronouns in learners' production of wh-questions as an indicator that these wh-questions have not been generated by wh-movement.

3.2 The Empty Category Principle

In Section 1.2, we considered one version of the Empty Category Principle, within the Barriers framework (Chomsky, 1986b). Below, we will see how more recent formulations have been defined within the framework of Relativized Minimality (Rizzi, 1990). Relativized Minimality is defined in (62):-

(62) **Relativized Minimality**
X x-governs Y only if there is no Z such that:-
(a) Z is a typical potential x-governor for Y
(b) Z c-commands Y and does not c-command X.
where government ranges over head government and antecedent government.[8]

[8]Note that in this framework, minimality is relativized according to the type of governor: antecedent government government can only be blocked by an intervening element Z, which is the same type as X, that is, which also antecedent governs Y and theta government can only be blocked by a head, Z

Within this framework, head government and antecedent government are formally defined as follows:-

(63) **Head Government**
X head-governs Y if and only if
(a) X {A, N, P, V, Agr, T}
(b) X m-commands Y
(c) no barrier intervenes
(d) Relativized Minimality is respected.

(64) **Antecedent Government**
X antecedent-governs Y if and only if
(a) X and Y are coindexed
(b) X c-commands Y
(c) no barrier intervenes
(d) Relativized Minimality is respected.

The formulation of the Empty Category Principle expressed in (11) and repeated here for convenience is as follows:-

(65) **The Empty Category Principle** (i)
(a) Traces must be properly governed.
(b) A properly governs B if and only if A governs B, and A theta governs B or A antecedent governs B.
(c) A theta-governs B if and only if A governs B and A theta-marks B.
(d) A antecedent-governs B if and only if A governs B and A is coindexed with B.

It will be noted that the definition of the ECP in (65) involves a disjunction in that a trace is properly governed if it is either theta-governed or antecedent governed. Conceptually, this is less than satisfactory since theta government and antecedent government are independent effects. This formulation of the ECP has been replaced with a conjunctive formulation in which two conditions have to be satisfied: a formal licensing condition and an identification requirement:-

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which theta-governs Y. This presents a contrast to the rigid minimality of the Barriers framework in which an intervening head such as the complementizer 'that' blocks goverment by a head and theta-government by a maximal projection.

(66) **The Empty Category Principle** (iii)
A non-pronominal empty category must be
(a) properly head-governed (Formal licensing)
(b) theta governed or antecedent governed; (Identification)
where proper head government is government by X^0 within the immediate X'
(c) theta government is government by a theta assigner
(d) antecedent government is government by an antecedent, an element that governs the governee and binds it;
(e) X binds Y if and only if X c-commands Y and X and Y are coindexed;
(Rizzi, 1990: 74).

In this definition, the identification requirement is disjunctive: the trace has to be identified by theta-government or antecedent government. Rizzi (1990:87) thus proposes the following modification in (67) in which the head government requirement is maintained.

(67) **The Empty Category Principle** (iv)
A non-pronominal empty category must be head-governed.[9]

However, the identification requirement is not included in the ECP; instead, it forms

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[9] The identification of the content of traces still has to be achieved; the moved constituent still has to be connected to its trace. Rizzi (1990) proposes that a distinction be made between constituents with a referential theta-role and those with a non-referential theta role with indices being reserved for constituents with referential theta roles. Moved constituents are connected to traces by binding or antecedent government. Binding is redefined in terms of referential coindexation:

(i) **Binding**
X binds Y if and only if
(a) X c-commands Y;
(b) X and Y have the same referential index
(Rizzi, 1990: 87)

Binding relations are not local relations and can be established across intervening antecedents; this means long distance movement may be accounted for. Antecedent government does not depend on coindexation; it is defined as follows:

(ii) **Antecedent government**
X antecedent-governs Y if and only if
(a) X and Y are non-distinct
(b) X c-commands Y;
(c) no barrier intervenes
(d) Relativized Minimality is respected

part of a general requirement on non-overt categories. One consequence of the failure to observe the Empty Category Principle are 'that trace effects' which we discuss below.

3.2.1 'That-trace effects'

In English, object extraction in the absence of an overt complementizer as in (68) or in its presence, as in (69) is grammatical. In contrast, subject extraction in the presence of an overt complementizer as in (71) is ungrammatical. Subject extraction is only grammatical in the absence of an overt complementizer, as in (70):-

(68) What do you think Steven likes to grow?

(69) What do you think that Steven likes to grow?

(70) Who do you think likes to grow vegetables?

(71) *Who do you think that likes to grow vegetables?

Sentences such as (71) are said to manifest 'that trace effects'. This condition on well-formedness is formally expressed as the That trace filter:-

(72) **That trace filter**
The sequence of an overt complementizer followed by a trace is ungrammatical

According to Rizzi (1990), 'that trace effects' can be accounted for in terms of the realization of tensed complementizers in English as 'that' or Agr (Agreement):-

(73) C $\begin{cases} \text{that} \\ \text{Agr} \end{cases}$

Agr can either be an independent head with its own projection or it can be associated with another head as a feature or a set of features. It is licensed by coindexation with its specifier. Rizzi proposes that 'that' is inert for government in contrast to Agr which belongs to the class of governors. If COMP is optionally realized as Agr, then it must be licensed through its coindexation with its Specifier and the Spec position must be filled by a wh-operator or trace of wh.

(74) Who do you think [$_{CP}$ t AGR [$_{IP}$ t likes to grow vegetables?]]

(75) *Who do you think [$_{CP}$ that [$_{IP}$ likes to grow vegetables?]]

In (74) the subject trace is properly head governed by Agr in embedded COMP position and antecedent governed by the specifier of COMP, in accordance with the ECP which stipulates that traces be properly governed. In (75), COMP position is filled by 'that' which is inert for government, thus violating the ECP.

In some regional dialects of American English, Sobin (1987) cited in Rizzi (1990) has found that 'that trace effects' are acceptable. Extraction of the subject in the presence of a complementizer is permitted in some languages, for example, Hebrew and Italian (Uziel, 1993). Rizzi accounts for this parametric variation by proposing that in languages where 'that trace effects' are acceptable, the complementarity expressed in (73) is absent and 'that' can carry Agr.[10]

3.3 Degrees of UG Violation

The degree to which a sentence violates Subjacency may be measured according to the number of barriers which are crossed; the more barriers which are crossed, the stronger the Subjacency violation (Chomsky, 1986b). Martohardjono (1991) points out that Subjacency violations may also be measured according to the type of barrier which is crossed; movement across a barrier which is invariant, that is, which is a barrier cross-linguistically, is a stronger violation of Subjacency than movement across a barrier which is variant or parameterized. In addition, barriers which require lexical learning of the subcategorization properties of individual nouns are weaker barriers than those which do not. In Chapter 2, Section 2.1, we will argue that the higher rejection rate of strong Subjacency violations than weak Subjacency violations constitutes more convincing evidence that UG continues to be accessible to the L2

[10] This cross-linguistic difference in the acceptability of 'that trace effects' is only one of a variety of phenomena which reflect parametric variation in the manifestation of agreement in the domain of COMP. Rizzi demonstrates that other manifestations of parametric variation in agreement in COMP may be found in overt agreement between a wh-element in the specifier position and COMP or between the complement and COMP or both. It may also be found in the restriction of agreement to +wh or -wh C^0 or whether overt agreement is optional or obligatory. Rizzi further points out that these parameters are not unique to agreement in COMP but the specific manifestation of Spec-head agreement relations which a theory of agreement in general must account for.

learner than the ability to only reject Subjacency violations. Learners' ability to demonstrate a lower acceptance of the less weak of two weak Subjacency violations than the weaker of the two Subjacency violations also constitutes more convincing evidence of UG accessibility than the ability to only reject Subjacency violations.

Sentences which violate Subjacency and another UG principle constitute stronger UG violations than sentences which violate only Subjacency. In object extraction from ungrammatical domains, the object trace is properly governed by lexical-marking from the verb. Thus, such extractions only violate Subjacency. The sentences in (76) to (79) illustrate this:-

(76) Object Extraction from Relative Clauses:
[CP What did you see [NP the man [CP that [IP washed t?]]]

In order to reach sentence initial position, the wh-element in (76) crosses two invariant barriers, the lower CP and NP nodes.

(77) Object Extraction from Adjunct
[CP What did [IP you meet Karen [CP after [IP she bought t?]]]]

In (77), the wh-element crosses two invariant barriers, the adjunct (the lower CP which is not L-marked) and the higher IP which inherits barrierhood from the adjunct.

(78) Object Extraction from Wh-Islands
[CP What did [IP Max explain [CP how [IP the poison killed t?]]]]

The extracted Wh-element in (78) crosses one invariant barrier, (CP) which is not L-marked and one parameterized barrier, the most deeply embedded tensed IP.

(79) Object Extraction from Complex NPs
[CP What do you believe [NP the rumour [IP Tom stole t?]]]

The most deeply embedded IP may or may not be a barrier depending on the subcategorization properties of the noun phrase which precedes it. In (79), the wh-element crosses two variant barriers, NP and IP which is not L-marked by 'the rumour'. In the case of a complex NP in which the noun phrase such as 'the fact' does subcategorize the following IP, only one barrier, NP is crossed, as in (80).

(80) [CP What do you believe [NP the fact [IP Tom stole t?]]]

In subject extraction from ungrammatical domains, the ECP is also violated in addition to Subjacency since the subject trace is not properly governed

(81) Subject Extraction from Relative Clauses
[CP Which man$_i$ did Sheila sewed [NP the shirt [CP t_i' [C that t_i had torn?]]]]

In (81), the wh-element crosses the invariant barriers CP and NP before reaching sentence initial position. The subject trace is not properly governed since antecedent government of the trace by the intermediate trace in Spec, CP is blocked by the relative pronoun in embedded COMP.

(82) Subject Extraction from Adjunct
[CP Who$_i$ did [IP you meet [CP t_i' [C before t_i greeted Karen?]]]]

In (82), the invariant barriers CP and IP are crossed before the wh-element reaches Spec, CP position of matrix COMP. Additionally, the ECP is violated since the subject trace is blocked from antecedent government by the intermediate trace in Spec, CP by the presence of the adjunct in embedded COMP.

(83) Subject Extraction from Wh-Islands
[CP Who$_i$ did [IP Meena find out [CP t_i [C how [IP t_i became rich?]]]]]

In (83), the wh-element crosses the variant barrier, the most deeply embedded tensed IP and the invariant barrier CP before reaching sentence initial position. The subject trace is not properly governed since the presence of 'how' in embedded COMP position blocks antecedent government by the intermediate trace in embedded Spec, CP.

(84) Subject Extraction from Complex Noun Phrases
[CP Who$_i$ do you believe [NP the rumour [IP t_i stole the money?]]]

In (84), in order to reach sentence initial position, the wh-element crosses the barrier IP (which can only be established through lexical learning of the subcategorization properties of certain nouns) and the parameterized barrier, NP. The subject trace is not lexically governed by the NP, 'the rumour'. In Chapter 2, Section 2.2.3, we will argue that learners' ability to reject violations of two UG principles more strongly than violations of a single UG principle constitutes stronger evidence than the ability to only reject violations of a single UG principle.

4 Constraints on Parameterization

In order to explain how the task of language acquisition is facilitated, attempts have been made to constrain parameterization and thus increase learnability. If parameterization can be restricted to certain narrowly defined limits, it will then be possible to account for the fact that the child acquires knowledge in a remarkably short time. A theory of constrained parameterization is thus conceptually attractive. Two hypotheses, the Lexical Parameterization Hypothesis and the Functional Parameterization Hypothesis, have restricted the focus of parameterization. Both of these hypotheses will be discussed in turn.

4.1 The Lexical Parameterization Hypothesis

Arising from their work on binding theory, Wexler and Manzini (1987) and Manzini and Wexler (1987) found that the governing categories, that is the configurations which include an anaphoric element and a possible antecedent, tend to differ from one lexical item to another, not only across languages but also within the same language. Two different lexical items from the same language may thus select different values for a possible parameter. In other words, as Wexler and Manzini point out, any given language can be expected to instantiate more than one value of a parameter in terms of different lexical items. The hypothesis is formally stated as follows:-

(85) Values of a parameter are associated not with particular languages but with particular lexical items in a language.

The above hypothesis assumes that while the principles of Universal Grammar are invariant (that is, not subject to parametric variation), parametric variation occurs as a result of differences in the properties of lexical items. The hypothesis that parametric variation is located in the properties of lexical items suggest that in principle, acquisition proceeds on the basis of acquiring lexical items of a language (and nothing else). As was discussed above in the explication on Government and Binding Theory, lexical representations are then projected by means of the Projection Principle onto the syntactic structure.

The question that inevitably arises then is the number of parameters that have to be 'set' in order for a language to be acquired. In spite of the fact that there is only a finite

number of lexical items in a language and therefore a finite number of parameter values, it nonetheless remains clear that there is a large number of parameter values to be 'set' before a child can acquire a particular language. In other words, far from explaining how it is that language acquisition proceeds when output is underdetermined by input, this hypothesis seems to suggest that acquisition proceeds on an item-by-item basis. Clearly, this is not in accord with the goal of linguistic theory to provide an explanatorily adequate account of linguistic knowledge. In the words of Safir (1987), the LPH gives rise to the problem of undergeneralization, depriving the child of valid generalisations. There is thus a case for constraining parameterization further than locating the locus of parametric variation in the properties of lexical items. With this in mind, we will next discuss a refinement of the LPH, that is the Functional Parameterization Hypothesis.

4.2 The Functional Parameterization Hypothesis

This hypothesis finds its origin in the suggestion by Chosmky (1989) on developing the LPH, that properties of the lexicon too are constrained by UG. Chomsky (1989:44) proposes that:-

(86) If substantive elements (verbs, nouns etc.) are drawn from an invariant universal vocabulary, then only functional elements will be parameterized.

This, in its essence, is the Functional Parameterization Hypothesis (FPH). It asserts that while lexical categories are substantive universals (and not subject to parametric variation), functional categories possess idiosyncratic elements which differ from one language to another. From this perspective then, linguistic variation is reducible to parameterized variation in the properties of functional categories. According to this hypothesis, the child has access to a universal inventory of functional categories. On exposure to a particular language, parameters are 'set' for the values of functional categories for that language. This hypothesis provides a possible solution to the problem of undergeneralization that concerned Safir regarding the LPH, since it can be reasonably assumed that the number of functional categories is much smaller than the number of lexical items for any particular language. By constraining the dimensions for variation to the properties of a finite set of functional categories, the hypothesis is able to explain how the child is able to acquire language in a remarkably

short period of time.

In second language acquisition, the Functional Parameterization Hypothesis predicts that parameter resetting for the L2 is linked to the properties of functional elements (Borer, 1983; Lebeaux, 1988). Thus, learners have to instantiate the functional categories for the L2. With reference to the acquisition of wh-movement, learners have to instantiate CP for wh-movement in the L2.

5 Summary

This chapter outlined the linguistic background to the study. Firstly, the descriptive and explanatory aims of the Principles and Parameters approach were outlined. Some important structural relations and the levels of representation of the theory were described. The modular nature of the theory was also considered within the context of the sub-theories which are relevant to the study of wh-movement, that is, X-bar theory, Theta Theory and Case Theory. Binding Theory was also described and an empty category which has been recently postulated, the null constant, was introduced.

Next, wh-movement was considered as an exemplification of domination by the Complementizer Phrase. Discussion centred on the landing and extraction site and the level of operation of wh-movement. The landing site of wh-movement was considered in terms of wh-phrases and parametric variation in movement through substitution or adjunction. In wh-movement by substitution, as is standardly assumed for English, both local and long distance movement were described. The site of extraction was described in terms of the properties of the wh-trace, the empty category left behind by the wh-phrase when it moves to Spec, CP position. Particular reference was paid to the necessity for proper government of wh-traces in accordance with the Empty Category Principle. The ill-formedness arising from lack of proper government of the subject trace in wh-movement was expressed in the that-trace filter. In addition, the properties of the wh-trace [-Anaphor, -Pronominal] were contrasted with the properties of NPs discussed in Binding Theory. Finally, it was suggested that parametric variation with regard to wh-movement may reside not so much in its presence or absence in natural languages but in its operation at S-structure in some languages and at LF in other languages.

In order to explain how the acquisition of wh-movement may be facilitated, innate constraints on wh-movement were also described in terms of the principle of Subjacency and the Empty Category Principle. Subjacency was defined within the Barriers (Chomsky, 1986b) framework. Its use as a diagnostic for movement was also demonstrated. Recent developments in the Empty Category Principle were also outlined. Degrees of UG Violation were considered in terms of the number and type of barriers crossed and whether a sentence violated one or two UG principles. Finally, two theories of constrained parameterization, the Lexical Parameterization Hypothesis and its development, the Functional Parameterization Hypothesis were outlined in order to suggest how learnability may be increased. Its implications for the second language acquisition of wh-movement were described.

In the next chapter, we will draw on the linguistic concepts described in this chapter to review the research done in the first and second language acquisition of wh-movement, with the emphasis on the latter.

Chapter Two

Continued Accessibility to UG in L2 Acquisition of Wh-Movement

Introduction

In this chapter, we discuss the accessibility of UG in the L2 acquisition of wh-movement. Within the generative framework, it is commonly accepted that first language acquisition is constrained by an innate language acquisition device which is known as Universal Grammar (UG). The uniformly successful attainment of the native language within a short period of time in the face of 'poverty of stimulus' is attributed to the presence of this innate language component. In contrast, it has been widely observed that second language learners often fail to attain a grammar of the L2 which resembles that of native speakers. This has led L2 researchers to conclude that UG is no longer accessible to non-native speakers, who consequently have to resort to problem-solving and other cognitive strategies to approximate the target language (Clahsen and Muysken, 1986; Schachter 1989). However, it has also been widely observed that the grammar which L2 learners attain is underdetermined by the input they receive. This in turn has led other researchers to argue that UG continues to be accessible to the L2 learner (Bley Vroman, Felix and Ioup, 1988). In between these conflicting positions on the accessibility of UG is the view that UG continues to be partially accessible to the L2 learner (Felix, 1991). This view reasonably accounts for the common failure of learners to attain native speaker knowledge of the grammar as well as the ability of L2 learners to attain grammars which are underdetermined by the input. Other researchers make a claim for the influence of the L1, arguing that where the L1 and the L2 have a particular parameter set differently, the learner will transfer the value of the L1 parameter into the L2 (White, 1985). However, as yet, there is no principled explanation for the extent to which UG is or is not accessible.

We begin our discussion by describing some fundamental concepts in this area. These include the distinction between 'acquisition' and 'learning', between competence and performance and between reception and production. The absence of a principled basis on which to determine the extent to which UG is accessible is reflected in the difficulty which researchers face in differentiating between knowledge which is 'acquired' as opposed to that which is 'learnt'. The former refers

to the subconscious ability to form a mental representation of the target grammar through positive evidence in the language while the latter refers to the conscious effort which is required to study a language by means of rules, correction or negative evidence. The subconscious ability to acquire a language in the manner of native language acquisition may be attributed to direct access to UG or to knowledge of UG instantiated in the L1 while conscious studying of a language may reflect lack of access to UG (cf. Zobl, 1995).

A principled account of the accessibility of UG to the L2 learner is also crucial for a closer understanding of 'linguistic competence' or the mental representation of the target language that the learner is exposed to. Within the generative framework, linguistic competence is usually contrasted against 'performance', which refers to the use of knowledge of language. Use of language knowledge is manifested in the ability to process input and produce sentences. The processing of input (comprehension) involves the receptive dimension of language use while mechanisms which mediate output involve the productive dimension of language use.[1] While both receptive and productive dimensions of performance draw on linguistic competence, it is important to acknowledge that the relationship between competence and performance is not a direct one: learners may acquire some knowledge of the L2 which form part of their competence but may not be able to use it immediately (Sharwood Smith, 1986; White, 1991a).

Much of L2 research aims to study the nature of competence by drawing on various aspects of performance. One aspect of performance through which competence has been extensively tapped is the use of grammaticality judgement tests to elicit learners' intuitions which are related to UG principles. These judgement tests commonly focus on learners' ability to reject UG violations and to accept grammatical sentences. The underlying assumption of these tests is that if learners possess knowledge of UG principles, they will be able to reject violations of these principles.

Knowledge of UG principles which have perhaps been the most widely tested in this

[1] White (1991a) points out that input-processing strategies may be required for acquisition but that it is not clear that production strategies are involved.

manner are those related to wh-movement, namely Subjacency and the ECP (eg. Bley Vroman et al 1988; Johnson and Newport, 1991; Martohardjono, 1991, 1993; Martohardjono and Gair, 1992; Schachter, 1990; White, 1988; White, Travis and Maclachlan, 1992). This choice of principles is motivated by at least two factors: firstly, wh-movement is only instantiated at S-structure in some languages. This allows researchers to test knowledge of these principles in L2 learners whose L1 does not instantiate wh-movement at S-structure: the possibility that learners may transfer knowledge of the L1 into the L2 is thus ruled out. Secondly, while wh-question formation may be taught in the language classroom, it is unlikely that learners will receive any formal instruction relating to constructions which violate Subjacency. It is also unlikely that learners will be able to infer the restrictions which are expressed in the principle merely from positive evidence of grammatical wh-questions in the input. Thus, if it can be demonstrated that L2 learners recognise Subjacency violations without the benefit of knowledge which has been transferred from the L1 or positive evidence in the input, it may be more convincingly argued that this is attributable to the continued accessibility of UG principles (White, 1992).

However, it is important to consider learners' ability to reject Subjacency and ECP violations within the developmental context (cf. Martohardjono and Gair, 1992; White, 1992). UG principles which are relevant to wh-movement are only relevant if wh-movement has been acquired. Thus, it is important to consider learners' conformity to UG principles in terms of developmental stages in the acquisition of wh-movement. We will demonstrate that the results obtained in the literature are consistent with an early non-movement stage in the acquisition of wh-movement. Apparent non-conformity to movement-related UG principles in the initial stages may therefore be more accurately interpreted as the lack of relevance of these principles to the L2 grammar. Once wh-movement has been acquired, the evidence in the literature suggests that learners exhibit behaviour which is in conformity to UG principles related to wh-movement.

Our review of the literature is structured as follows. In Section 1, we focus on learners' ability to reject Subjacency and ECP violations and to accept grammatical wh-questions within the developmental context of wh-movement. We argue that the evidence suggests that once wh-movement is acquired, learners are able to reject violations of movement-related principles. In Section 2, we discuss learners' ability

to reject UG violations according to the degree with which they are violated. We argue that this ability constitutes stronger evidence for continued accessibility to UG principles than the ability to merely reject UG violations. In Section 3, we discuss evidence of learners' preference for grammatical wh-extraction over ungrammatical wh-extraction. We argue that this preference becomes clear once learners have acquired wh-movement and are guided by the relevant principles. Section 4 discusses L1 influences at the discoursal and syntactic levels, the role of input-processing constraints in the acceptability of sentences and the possible interaction of L1 influences with processing strategies. We argue that learners' ability to overcome certain L1 influences may be the result of an interaction between accessibility to UG principles, the developing L2 grammar and the ready availability of positive evidence in the input. Section 5 discusses developmental sequences in L1 and L2 acquisition of wh-movement. In this section, we argue that the picture which emerges is consistent with one in which early wh-questions are not generated by movement but in which wh-movement is acquired with continued exposure to the L2 and through the continued accessibility of UG principles. Finally, in Section 6, we discuss the nature of change in the grammar, possible triggers for change and the role of lexical learning in the instantiation of functional categories for the L2, with particular reference to wh-movement. We also discuss the ultimate level of attainment of L2 learners.

1 Ability to Reject Subjacency Violations and to Accept Grammatical Wh-Questions

It is not our purpose to provide an exhaustive review of the numerous studies which have been conducted and the often conflicting positions which have been argued for. Rather, we wish to concentrate on a few notable studies in order to illustrate the importance of interpreting knowledge of UG principles within a developmental context. The studies chosen are those of Schachter (1989), Bley-Vroman et al (1988) and Martohardjono and Gair (1992). We chose the first two studies because the researchers arrive at quite different conclusions regarding the accessibility of UG principles to the L2 learner. The last study was selected because it is representative of a recent trend which explicitly acknowledges that knowledge of movement-related principles should not be tested in isolation but evaluated in the context of

other movement-related developmental features (see also White, 1992 on this point). We will argue for a unified account of the results obtained in these studies on the basis of learners' knowledge of wh-movement in the target language.

1.1 Schachter (1989)

One of the most notable studies on Subjacency was Schachter's (1989) study of four groups of L2 learners of English: Dutch, Indonesian, Korean and Chinese learners. Schachter based her research on the view that Dutch was similar to English with respect to wh-movement, Indonesian instantiated limited wh-movement forbidding object extraction and that Chinese and Korean did not instantiate wh-movement at all.[2] Of the latter two, Chinese instantiated other operations such as relative pronoun extraction which were subject to Subjacency in contrast to Korean in which Subjacency did not appear to operate at all. Schachter aimed to test whether UG is accessible to adults whose L1 does not instantiate wh-movement (Korean) or whether it is only accessible to those whose L1 does instantiate wh-movement, like English (Dutch). The Chinese and Indonesians were intermediate cases for whom Subjacency operated in the L1 but not in the same range of structures as the L2.[3] These learners were subjected to two tests: one on Syntax and one on Subjacency. The former consisted of sets of grammatical sentences which included sentential subjects, relative clauses, noun phrase complements and embedded questions, while the latter consisted of Subjacency violations. The Syntax test was a crucial element of Schachter's experiment in that it was important to determine that learners had attained an adequate knowledge of wh-movement in order for Subjacency to operate; without this knowledge, Subjacency would simply be irrelevant to their grammars.

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[2] White (1992) points out that in fact, it is difficult to find learners whose L1 does not instantiate a particular principle at all. With reference to Subjacency, although languages such as Chinese and Japanese do not instantiate syntactic wh-movement, Subjacency does operate at the level of LF (Huang, 1982). Thus, learners whose L1s are Chinese and Japanese may have knowledge of Subjacency though they may not have knowledge of how wh-movement is constrained by Subjacency at S-structure.

[3] The analysis which Schachter (1989) used of movement in Indonesian (Muller-Gotama, 1988) differs from that of Martohardjono and Gair (1992): the former argues that wh-movement is limited in Indonesian in prohibiting object extraction while the latter argues that wh-movement is absent.

The prediction was that if learners had continued access to UG, they would pass both tests. If they failed the syntax test, they did not have sufficient knowledge for Subjacency to operate and thus would not be suitable candidates to determine the continued accessibility of UG. If they passed the syntax test and failed the Subjacency test, this would constitute evidence against the accessibility of UG. Schachter found that only the Dutch speakers obtained native speaker-like scores in both tests; the Koreans, Indonesians and Chinese learners passed the syntax test but failed the Subjacency test. The Indonesians and Chinese achieved better than chance accuracy whereas the Koreans appeared to be operating at chance. It appeared that those learners in whose L1s Subjacency applied, even within restricted domains, had the advantage over those learners in whose L1s it did not apply at all. On the basis of these findings, Schachter argued that UG did not appear to be directly accessible to learners after puberty.

The validity of Schachter's syntax test to measure wh-movement has been criticised for its employment of grammatical declarative sentences to test if subjects knew the constructions on which Subjacency would be tested well enough to allow evaluating their responses to Subjacency violations. Johnson and Newport (1991) point out that since the grammatical sentences form the syntax test and the ungrammatical sentences the Subjacency test, a simple response bias tc acceptance of the items in both tests would result in the learner passing the syntax test and failing the Subjacency test. Secondly, since Schachter used only grammatical declaratives, the possibility that learners may reject wh-questions in any form, particularly long-distance questions, can not be ruled out. The seriousness of these criticisms is that if it has not been established that wh-movement has been acquired, then the inability to reject Subjacency violations cannot be attributed to the inaccessibility of UG.

Instead, the inability to reject Subjacency violations can be more directly attributed to the absence of movement in beginning learners. From this perspective, it is hardly surprising that learners whose L1s instantiate wh-movement are most accurate at rejecting Subjacency violations while learners whose L1s do not instantiate wh-movement at all perform worst at rejecting Subjacency violations; the former may be facilitated in their route to movement through transfer of their knowledge of movement in their L1 while the latter have no such advantage. The comparative success rates of the learners suggest that the presence or absence of wh-movement

in the L1 may be a major factor in the rate at which subjects acquire wh-movement, and consequently in their ability to reject Subjacency violations.

1.2 Bley-Vroman, Felix and Ioup (1988)

Using Korean advanced speakers of English and English native speaker controls, Bley Vroman et al carried out a similar study testing knowledge of Subjacency as well as the Empty Category Principle. They used a test in which there was an equivalent number of grammatical sentences and ungrammatical sentences violating Subjacency. Slightly more than half of the Korean subjects performed accurately on the test, finding grammatical sentences more difficult than ungrammatical ones; in other words, the non-native subjects were significantly better at rejecting ungrammatical sentences than at accepting grammatical ones.[4] In particular, there was a high rate of rejection of long grammatical sentences by learners. Bley Vroman et al speculate that the tendency to reject when uncertain could at least be partially responsible for the lower success rate of learners in comparison with native speakers and that if it was possible to abstract this tendency to reject, the non-native response pattern would resemble the native-speaker pattern much more closely. Drawing on these observations, they cautiously conclude that the learners appeared to have 'some sort of access to knowledge of UG' as well as to be employing a general problem solving strategy.

Viewing the results from this study from the developmental perspective of wh-movement, the partial success of Korean subjects on Subjacency violations may be directly linked to their difficulty in accepting grammatical sentences. The inability to accept long grammatical sentences which Bley-Vroman et al attribute to uncertainty

[4] Felix (1988, 1994) argues that judgements of ungrammatical constructions reflect UG influence more accurately than grammatical constructions. He maintains that these findings are in accord with the widely accepted role of UG in constraining the learner from ungrammatical sentences in the absence of negative evidence. If UG continues to be accessible to the L2 learner, then she would be constrained from accepting ungrammatical sentences; however, learners may judge grammatical sentences to be less than acceptable for other than UG- theoretic reasons (as will be discussed in Section 3). Summing this up concisely in Felix's (1988:289) words, `UG is an unambiguous source of information for ungrammaticalities, but only a secondary source for identifying grammatical sentences.' According to this view, the higher success of Bley Vroman et al's subjects on ungrammatical constructions than grammatical constructions constitutes evidence of continued access to UG, if we can demonstrate that wh-movement has indeed been acquired and that subjects are not rejecting ungrammatical sentences for reasons other than grammaticality.

may indicate that wh-movement has not yet been acquired. If this is so, then the inability to reject Subjacency violations on the part of some of the Korean learners may be traced to the fact that they have not yet acquired wh-movement. This non-acquisition of wh-movement in some learners may at least partly be accounted for by the fact that wh-movement is not instantiated in Korean.

1.3 Martohardjono and Gair (1992)

In contrast to the other two studies, Martohardjono and Gair's (1992) study explicitly sets out to test the hypothesis that learners' inability to reject Subjacency violations may be a manifestation of a UG constrained grammar in which Subjacency does not apply, that is, a grammar in which wh-movement is absent in the grammar. They employed two diagnostics of movement to determine whether the empty category in wh-questions was treated as pro by intermediate and advanced Indonesian learners of English. Arguing that Indonesian is a language which does not instantiate wh-movement at S-structure, they predicted that if Indonesian learners of English were influenced by their L1, they would perceive NP gaps in movement to be base-generated pro, instead of wh-trace. If this was the case, Subjacency would be irrelevant since pro is not subject to Subjacency. Certain object gaps would also not be allowed since in this grammar, gaps can only be filled by pro which follows the constraint against object pro proposed by Huang (1984).

To test whether learners' grammars had a constraint against object gaps, Martohardjono and Gair used an elicited imitation task consisting of grammatical sentences to compare performance on gaps in subject position to those in object position. In order to determine whether learners were able to recognise Subjacency violations, they used a grammaticality judgement task consisting of grammatical and ungrammatical forms of wh-extraction. They predicted that learners who had not acquired wh-movement would fill the gap with pro and perform worse on sentences with object extraction than subject extraction in the elicited imitation task. They would also fail to reject Subjacency violations. In contrast, they predicted that learners who had acquired movement would perform equally well on subject and object gaps and would reject Subjacency violations.

In conformity with their predictions, Martohardjono and Gair found that

intermediate Indonesian learners performed better on subject extraction than object extraction and failed to reject Subjacency violations. Advanced Indonesian learners performed equally well on subject and object extraction and rejected Subjacency violations. Martohardjono and Gair conclude that there is an early non-movement stage traceable to the influence of the L1 in which the empty category is treated as pro. This allows learners to accept Subjacency violations. With continued exposure to the L2, learners appear to receive sufficient evidence to treat the empty category as trace, and thus reject Subjacency violations.

Martohardjono and Gair's study differs from the other two in incorporating a developmental dimension by testing learners of differing proficiency levels from the same language background. This allows them to recognise that the primary relevance of the ability to reject Subjacency violations is not so much as an indicator that UG continues to be accessible to the L2 learner as much as an indicator of the presence of wh-movement in the interlanguage. The findings they obtain from the two elicitation tasks employed imply that both acceptance and rejection of Subjacency violations may be in conformity with UG-constrained grammars depending on the status of wh-movement in the grammar.

Accordingly, learners acceptance of UG violations in Schachter and Bley Vroman et al's studies may be in conformity with a UG-constrained grammar in which wh-movement is not present. Both these studies do not adequately assess the status of wh-movement in the interlanguage: Schachter's syntax test uses only declaratives while Bley Vroman et al 's attribution of the high rejection rate of long-distance wh-movement to uncertainty is less than satisfactory. Thus, both studies allow for the possibility that learners who accept UG violations of Subjacency and the ECP may not have acquired wh-movement, as appears to be the case with the intermediate learners in Martohardjono and Gair's study. The latter study also shows that when learners have acquired wh-movement, they do reject violations of UG principles related to wh-movement. We may speculate that had Schachter and Bley Vroman et al also tested learners from the same language background who had already acquired wh-movement, they would have obtained a higher rejection rate of Subjacency violations.[5]

[5] In all three studies, the inability to reject Subjacency violations is seen in learners whose L1 does not instantiate wh-movement. It is thus not possible to disentangle the influence of the L1

2 Relative Acceptability of Ungrammatical Wh-Extraction

In this Section, we review studies which demonstrate that not only do learners have knowledge of what is prohibited by UG principles which are relevant to movement but they also possess knowledge of the extent to which it is prohibited. This considerably strengthens our argument that UG principles continue to be accessible to the L2 learner. The knowledge of the extent to which UG principles which are relevant to movement are violated may be measured by learners' relative ability to discriminate between:-

(1) (a) constructions which strongly violate a UG principle from those which weakly violate it
(b) constructions which violate two UG principles from those which violate a single UG principle

The scale on which ungrammaticality may be discriminated has been termed the gradience of acceptability (Martohardjono, 1991), gradience of ungrammaticality (Sorace, 1993) or evaluation metric (Uziel, 1993). Applied to Subjacency, a hierarchy of ungrammaticality may be established according to:-

(2) (a) the number of barriers which are crossed
(b) the type of barriers which are crossed (variant or invariant)
(c) whether other UG principles are violated.

The above criteria were employed by Martohardjono (1991). In this study, strong violations consist of extraction from relative clauses and adjuncts while weak violations consist of extraction from wh-islands and complex noun phrases. The strong violations involve movement across two invariant barriers, that is nodes which constitute barriers cross-linguistically, whereas of the weak violations, wh-islands consist of movement across one invariant barrier and one parameterized barrier while complex noun phrases consist of one parameterized barrier and one barrier which is established by lexical learning. Using Martohardjono's terminology, the assumption is that invariant barriers which do not need to be set for the L2 entail fewer 'steps in the acquisitional process' (1991: 4) than variant barriers which need

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from a universal early developmental stage in which movement is not present. It is possible that the factors of L1 influence and an early common developmental stage may have combined to prolong the period during which wh-questions were generated in the absence of movement (cf. Zobl, 1982). In the Sections which follow, we will review studies which clearly suggest that there is a universal developmental stage in which wh-movement is absent.

to be established for the L2. Thus, she predicts that there will be a higher rejection rate for ungrammatical extraction from relative clauses and adjuncts than from wh-islands and complex noun phrases.

Of the two weak violations, since one of the two barriers involved in extraction from wh-islands is invariant, fewer steps in the acquisitional process are involved in establishing barriers against extraction from these constructions in contrast to complex noun phrases in which both barriers are variant. Additionally, it may be easier to establish variant barriers by parameterization than through lexical learning. Thus, of the four construction-types, extraction from complex noun phrases carries the heaviest burden in acquisitional terms since not only does the parameterized barrier have to be set for the L2, but lexical learning on piecemeal evidence is also required to establish whether nouns subcategorise for the phrasal complement or not.

In addition to what Martohardjono calls the 'strong/weak' contrast', the 'Cumulative Effect Hypothesis' contrasts subject and object extraction from the four clauses above. Subject extraction which violates Subjacency and the Empty Category Principle (ECP) is worse than object extraction which only violates the former. Assuming that knowledge of the extent to which sentences violate UG principles can only be derived via access to UG, Martohardjono predicted that learners who are beginning to acquire wh-movement would demonstrate a higher rate of rejection for strong violations than weak violations and that of two weak violations, the less weak one would be rejected more strongly than the weaker violation. With regard to extraction from each clause, she predicted that learners beginning to acquire wh-movement would more strongly reject subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases than object extraction from the same clauses.

Below we will discuss Martohardjono's experiment and the results she obtained for strong and weak violations of Subjacency and the Cumulative Effect Hypothesis. We will also discuss Uziel (1993)'s replication of her experiment with Hebrew learners and his comparison of the results obtained with those of Martohardjono's native speakers and Italian subjects. We will supplement these with the results obtained from White, Travis and Maclachlan's (1992) study on the acquisition of wh-

movement by Malagasy learners of English.

2.1 Strong/Weak contrast

Martohardjono used 3 groups of learners; Chinese, Indonesian and Italian and a control group of native speakers. Of these, the L1 of the first two does not instantiate syntactic movement in wh-questions at S-structure while the L1 of the last, Italian does instantiate wh-movement but has a different parameter-setting for wh-islands than English. Since Chinese does not instantiate overt movement in questions, the equivalent constructions are all acceptable. In Indonesian, questions involving extraction from relative clauses and adjuncts are grammatical since, as in Chinese, they do not involve overt movement of the wh-word. In contrast, questions involving wh-islands and noun complements have a lower acceptability status which Martohardjono attributes to 'language-particular reasons unrelated to the issue of syntactic movement.'

Martohardjono found that all the groups rejected strong violations involving extraction from relative clauses and adjuncts more strongly than weak violations involving extraction from wh-islands and noun complements. On the basis of this finding, she argues that L2 learners have knowledge of differential Subjacency effects irrespective of whether syntactic movement of wh-questions is instantiated in the L1 or not. The fact that the Indonesian subjects too were able to overcome L1 constraints strengthens the claim that learners have access to a source that is independent of their knowledge of the L1, that is, UG. These results are supported by Uziel (1993) who found that Hebrew learners rejected violations involving two invariant barriers more strongly than violations involving variant barriers. Uziel attributes the higher success rate for strong violations to the fact that the barriers against movement are identical in the L1 and the L2; weak violations require parameters to be reset, delaying the establishment of barriers for the L2. Li (1992) also found that Chinese L2 learners of English rejected extraction from relative clauses more strongly than extraction from complex noun phrases.

With regard to weak violations, the Chinese and the Indonesians rejected extraction from wh-islands more strongly than extraction from complex noun phrases, supporting the hypothesis that those barriers which require parameter-setting and

lexical learning in order to be established involve more steps in the acquisitional process than those which require only parameter-setting. However, the Italian group did not discriminate between the two weak violations. Martohardjono suggests two reasons for this. Firstly, they could either be at a more advanced stage of acquisition than the other L2 groups and moving toward the steady state of the control group. Secondly, since the parameterized barrier against extraction from wh-islands has already been established in Italian, it may take Italian learners longer to reset the parameter than learners from the other L2 groups who are setting the parameter for the first time.

It is worth noting the possibility that had Martohardjono tested learners at lower levels of proficiency who had not acquired wh-movement, she may not have obtained differential responses to Subjacency violations. Since movement may not be present in the grammars of beginning learners, they would not have been able to distinguish between strong and weak violations of Subjacency. It is also noteworthy that one of the ways in which Martohardjono accounts for the lack of discrimination between weak violations by the Italian group is by allowing for the possibility that they may be more advanced than the other two learner groups. This seems to suggest that as learners become more proficient in the L2, their discrimination between two weak violations of Subjacency is less obvious. The implication appears to be that as learners approach the completion of the acquisitional process with both invariant and variant barriers firmly established for the L2, they are likely to reject Subjacency violations, without discriminating between two weak violations. Thus, we may expect that in a cross-sectional investigation of learners from beginning to advanced levels, beginners and learners who are highly proficient in English are not likely to produce differential responses to Subjacency violations for different reasons; the beginners, because they have not acquired wh-movement, the highly proficient learners, because they have completed the acquisitional process with respect to establishing the barriers against ungrammatical movement in the L2. In contrast, those learners at the intermediate levels who are in the process of acquiring wh-movement are most likely to exhibit differential responses to varying degrees of Subjacency violations.

White, Travis and Maclachlan (1992) tested Malagasy learners of English, whose L1, like English, does not allow extraction from domains such as relative clauses,

adjuncts or complex noun phrases. They employed a grammaticality judgement task and a production task. All the subjects did both tasks, some completing the judgement task before the production task while others completed the production task before the judgement task. No effect was found for test version. In the grammaticality judgement task, rejections and acceptances of the stimuli were analysed while responses of 'not sure' which was about 10% were eliminated.

The results of the grammaticality judgement task revealed that both learner groups rejected extraction from relative clauses, adjuncts and complex noun phrases, with the high intermediate group demonstrating a higher accuracy rate than the low intermediate group. No significant differences were found in the means obtained by the high intermediate group and the native speakers, suggesting that learners approximate native speaker competence in their observance of Subjacency. The results obtained are in conformity with that of Martohardjono's (1991) study in that there is a higher rejection rate for extraction from relative clauses than complex noun phrases in both groups of learners.

In the question formation task, where the possibility of extracting elements from prohibited domains is open, few subjects and controls produced UG violations; instead they usually produced what White et al call 'paraphrases' which included simple questions, wh-in-situ questions or rephrases which were sometimes ungrammatical but did not violate UG principles. The violations produced were from the low intermediate group and mostly consisted of extraction from complex noun phrases, in conformity with Martohardjono's (1991) view that the two variant barriers involved in extraction from theses constructions take longer to establish than invariant barriers. The results obtained from the two tasks converge; subjects who produced UG violations in the question formation task are inaccurate in rejecting them in the grammaticality judgement task while subjects who avoid UG violations in the production task are accurate in rejecting them in the judgement task. Significantly, it was found that those subjects who incorrectly accepted violations also incorrectly rejected grammatical wh-questions, suggesting that wh-movement had not yet been acquired.

White et al's study differs from the other two studies in employing production data as well as judgement data. By drawing on the convergence of both forms of data,

White et al are able to make a stronger claim that the learners are constrained by Subjacency than if they had used either judgement or production data only. Their results strongly suggest that when learners have acquired wh-movement as indicated by their acceptance of grammatical wh-questions, they are able to correctly reject and avoid producing UG violations in accordance with UG theoretic predictions.

However, one shortcoming of the study is its elimination of responses which were 'not sure'. This study shares the same weakness as Bley Vroman et al's (1988) study in not pursuing factors which may contribute to learners' uncertainty with regard to wh-movement. The responses of uncertainty may have indicated that the subjects concerned had either not acquired wh-movement or that they may be at the transition between movement and non-movement. If the former was the case, closer analysis of the production data in the White et al study would have revealed indicators of non-movement whereas if the latter was the case, it would have revealed evidence that was consistent with both movement and non-movement grammars.

2.2 Cumulative Effect Hypothesis

In conformity with her hypothesis, Martohardjono found that overall, subject extraction was rejected at a higher rate than object extraction, with statistically significant results for the Chinese group but not for the Italian or Indonesian groups who did not discriminate between the two extraction-types as clearly. However, a closer examination of the results revealed that the differential responses for the learner groups as well as the control group to subject and object extraction is more clearly seen in weak Subjacency violations than in the strong ones. Martohardjono suggests that a 'ceiling effect' may be at work in the case of subject and object extraction from the strong violations. Martohardjono does not clearly elaborate on what she means by 'ceiling effect' but the implication seems to be that there is a threshold of Subjacency violation beyond which sentences are so unacceptable that it is not possible to discriminate between sentences which violate Subjacency and the ECP and sentences which only violate Subjacency. This possibility is supported by the results of the control group in which subject/object asymmetry cannot be discerned in strong violations. The issue that remains to be addressed then is why the response to subject/object asymmetry is significant in the Chinese group.

Martohardjono suggests that they may be at a lower stage in the acquisitional process than the other learner groups and that the ceiling effect only comes into play once learners arrive at a certain acquisitional stage, which may immediately precede the steady state as exemplified by the native speakers in the control group.

Martohardjono seems to imply that the Cumulative Effect Hypothesis most strongly applies to learners who are not near the completion of the acquisitional process. Learners at higher levels of proficiency and native speakers do not discriminate between subject and object extraction from relative clauses and adjuncts possibly because the invariant barriers are so firmly established for the L2 that it is not possible to discriminate between violations of one UG principle and violations of two UG principles. They are more likely to discriminate between subject and object extraction from wh-islands and complex noun phrases since the variant barriers which are involved may not be established. In this case, the violation or non-violation of another UG principle may influence their judgement. It is also likely that the discriminative ability predicted by the Cumulative Effect Hypothesis will not be seen in learners at lower proficiency levels than those in Martohardjono's study, who have not instantiated wh-movement for the L2. Since movement is not present in their grammars, these learners would be unlikely to discriminate between violations of two movement-related UG principles and violations of a single movement-related UG principle. Thus, as with the ability to discriminate between two weak Subjacency violations, the ability to discriminate between ungrammatical subject and object extraction from wh-islands and complex noun phrases may be more clearly seen among intermediate learners who have passed the early non-movement stage but who are still in the process of acquiring wh-movement.

Uziel too found that in conformity with the Cumulative Effect Hypothesis, subject extraction involving the violation of two UG principles was more strongly rejected than object extraction involving the violation of a single UG principle. Like Martohardjono, Uziel found that the difference in responses to subject and object extraction was larger in wh-islands and complex noun phrases than in relative clauses and adjuncts. Contrary to the Cumulative Effect Hypothesis, Uziel found a general tendency to reject object extraction more decisively than subject extraction in relative clauses and adjuncts. This tendency was weakly manifested by the Hebrew and English subjects but strongly manifested by the Italian group. Uziel

accounts for this contradiction between the prediction and the findings for the Italian group by pointing out that in Italian it is possible to use pro in subject position with a resumptive pronoun strategy which circumvents Subjacency violations and by suggesting that the Italian subjects may be extending this strategy to subject extraction from relative clauses and adjuncts. This would account for their greater tolerance of ungrammatical subject extraction than ungrammatical object extraction from these constructions. This finding is particularly noteworthy in that it demonstrates how language-specific influences may override UG-theoretic predictions. It also presents an interesting contrast to Martohardjono's study: Martohardjono in fact found that the Indonesian subjects in her study were able to overcome the lower acceptability of extraction from wh-islands and complex noun phrases in comparison to extraction from relative clauses and adjuncts in the L1 to produce responses which are in conformity with UG-theoretic predictions. It is possible that the ability of Martohardjono's subjects to overcome the L1 constraints may be due to the fact that Indonesian does not instantiate wh-movement at S-structure. Thus, the Indonesian learners would not have had access to movement strategies in the L1 in contrast to the Italian subjects in whose L1, wh-movement is instantiated at S-structure. The latter would have to unlearn the resumptive pronoun strategy which is possible in the L1 in order to produce judgements which are in conformity with UG-theoretic predictions.

Uziel claims that the study provides strong evidence for the fact that UG continues to be accessible to the L2 learner. However, given that wh-movement is instantiated in Hebrew and Italian, the possibility that these subjects may be drawing on their knowledge of wh-movement as instantiated in the L1 as opposed to direct access to UG as an independent knowledge source cannot be ruled out. The possible influence of knowledge of the first language in Italian learners as noted above with reference to the acceptability of ungrammatical subject extraction from relative clauses and adjuncts makes this possibility all the more plausible. Rather, the noteworthy contribution that this study makes is that it demonstrates that when learners begin to acquire wh-movement, they are not only able to reject Subjacency violations but are also able to reject them according to the extent to which Subjacency is violated. They are also able to reject Subjacency violations according to whether other UG principles relevant to movement, such as the ECP, are violated as well.

3 Discrimination between Grammatical and Ungrammatical Extraction

In this section, we review studies which investigate the ability of subjects to discriminate between grammatical and ungrammatical wh-movement. It has been argued that this ability stems from knowledge of UG (White, Travis and Maclachlan, 1992; Felix, 1994). We argue that once learners acquire wh-movement, they are able to discriminate between sentences which violate UG principles and their grammatical equivalents. We pay particular attention to learners' sensitivity to violations of the Empty Category Principle resulting in 'that-trace effects' and the UG condition that subjects must be canonically governed.

3.1 Proper government of traces

White et al tested the sensitivity of Malagasy learners to sentences with 'that-trace effects'. In Malagasy, subject extraction is equally grammatical in the presence or absence of a complementizer. Both the low intermediate and the high intermediate Malagasy learners in their study did not discriminate between 'that-trace effects' and the grammatical equivalent in either the grammaticality judgement task or the question formation task. In other words, they accepted and produced both the grammatical and the ungrammatical forms.

This presents a contrast with the native speakers: White et al found that in the grammaticality judgement task, they accepted 'that-trace effects' more readily than extraction from other ungrammatical domains but less readily than extraction from grammatical domains. They also reported that 'that-trace effects' are less strongly accepted than the grammatical equivalent. This suggests that 'that-trace effects' may have an intermediate status of grammaticality between the other forms of grammatical and ungrammatical extraction in the mental representation of native speakers. In the question formation task, native speakers never produced any 'that-trace effects', in contrast to both groups of learners who were more inclined to produce 'that-trace effects' than the grammatical equivalent. White et al account for this by suggesting that native speakers may have a preference for subject extraction in the absence of a complementizer but they also accept subject extraction in its presence. This preference would account for their acceptance of both the grammatical and ungrammatical forms in the grammaticality judgement task but the use of only the preferred form in the production task. They suggest that in contrast,

learners may prefer 'that-trace effects' to the grammatical form. We find it is difficult to sustain the suggestion that learners may have a preference for the ungrammatical form as there is no indication that they more strongly accept the ungrammatical form over the grammatical form or that there is a higher frequency in their production of 'that-trace effects' than the grammatical equivalent. A more likely possibility, which White et al do not entertain, is that given that Malagasy permits embedded subject extraction both in the presence and absence of a complementizer, the inability of Malagasy learners to discriminate between grammatical and ungrammatical subject extraction in terms of judgement and production may, in a large part, be due to L1 influence.

Uziel (1993) found that Hebrew and Italian learners of English also had a lower accuracy rate on sentences with 'that-trace effects' than they did on the grammatical sentences. Since both Hebrew and Italian do not manifest 'that-trace effects', the possibility that this may be due to L1 influence immediately arises. However, Uziel dismisses this possibility by claiming that if transfer was responsible, the grammatical sentences in English would have been judged ungrammatical by the L2 learners since both Hebrew and Italian allow the presence of an overt complementizer. We maintain that the role of the L1 cannot be so easily dismissed since it is possible that learners influenced by the L1 would receive positive evidence in the input that subject extraction in the absence of a complementizer is grammatical, thus allowing them to accept such sentences. However, they would not receive any evidence that subject extraction in the presence of a complementizer is ungrammatical which would account for their acceptance of 'that-trace effects'.

3.2 Canonical Government

White et al tested Malagasy learners of English in order to determine whether they recognise that domains of extraction must be canonically governed. The direction of canonical government is determined by the direction of government from V to O (Kayne, 1984 cited in White et al, 1992). Malagasy is a VOS Austronesian language, in which, like English, the direction of canonical government is to the right. However, unlike English, subjects in Malagasy are canonically governed since they are to the right of the verb. Thus while English does not allow extraction from DP or CP (sentential) Subjects, Malagasy allows extraction from CP Subjects but does not

allow extraction from DP Subjects. It prohibits extraction from DPs in subject and object position for language-specific reasons.

White et al predicted that if UG continues to be accessible to L2 learners, then Malagasy learners of English would acquire the possibilities for wh-movement which are permitted in English and observe its limitations. If UG is no longer accessible to the learner and if the learner is reliant only on the knowledge of UG as instantiated in the first language, then they predicted that there would be 'considerable overgeneralization and incorrect generalization' (349: 1991). They found that in accordance to the hypothesis that UG continues to be accessible to the L2 learner, Malagasy learners correctly rejected extraction from CP Subjects, overriding the L1 influence and conforming to the UG condition that the domain of extraction must be canonically governed. Moreover, they correctly accepted extraction from CP Objects which Malagasy does not allow. Uziel (1993) also found that both Italian and Hebrew learner groups correctly rejected extraction from CP Subjects.

In this section, we considered learners' ability to discriminate between 'that-trace effects' and its grammatical equivalent and the ability to discriminate between domains of extraction according to whether the Condition on Extraction Domains is violated. We have seen that learners face some problems in realising the proper government of embedded subject trace but there appears to be some idiolectal variation even among native speakers in this regard. It is also clear that there is parametric variation in what constitutes proper governors of subject trace so that the difficulties which learners face in this respect may be accounted for by the need to reset the parameter for the L2. In contrast, learners appear to distinguish between grammatical and ungrammatical domains of extraction in conformity with the Condition on Extraction Domains without any problem in spite of the fact that the direction of canonical government in Malagasy is opposite to English. This may be due to the fact that two invariant barriers are crossed in Extraction from CP and DP Subjects in English. It may also be due to the ready availability of evidence in the input that the direction of canonical government in English is from left to right.

4 Relative Acceptability of Grammatical Sentences

In this section, we turn our attention to the relative acceptability of grammatical wh-movement. We will study the possible influence of the L1 at the syntactic and discoursal levels. We will also discuss the role of processing constraints in the processing of input and possible interaction with L1 constraints. Finally, we will discuss the possibility that grammatical extraction within local movement may be more acceptable than the same extraction-type in long-distance movement owing to learnability considerations.

4.1 L1 influence at the level of syntax

It will be recalled that in our discussion of Martohardjono and Gair's study of Indonesian subjects in Section 1, there was an L1 constraint against object extraction. In such cases, we may anticipate that beginning learners who are influenced by the L1 may find sentences with grammatical subject extraction more acceptable than sentences with object extraction. Indeed, it will be recalled that Martohardjono and Gair found that the low intermediate subjects performed better in the elicited imitation task with subject extraction than object extraction.

In contrast, White et al found that although Malagasy does not permit extraction of either DP or CP objects,[6] low intermediate and high intermediate Malagasy learners of English were able to overcome the L1 constraint.[7] However, the possibility remains that beginning Malagasy learners of English may have a constraint against object extraction. If so, they may be predicted to favour subject extraction over object extraction. White et al also found that both low intermediate and high intermediate Malagasy learners of English were not able to produce preposition stranding. This may be traced to the influence of the L1 which has two constraints against preposition-stranding; it prohibits extraction of objects and it does not have a specifier position for DP, disallowing movement of wh-elements out of the DP.

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[6] If the logical object has to be questioned, then it has to be converted to the subject of a passive sentence and the passive form of the verb used.

[7] White et al argue that the ability of learners to accept sentences which are grammatical in the L2 but not the L1 (extraction from DP and CP objects) and to reject sentences which are grammatical in the L1 but not in the L2 (extraction from CP subjects) strongly suggests continued accessibility to UG.

Bearing in mind that these learners appear to overcome the L1 constraint against object extraction, it may be possible that they find it more difficult to accept forms of grammatical extraction which are prohibited on two counts in the L1. Since preposition-stranding is only found in a few Indo-European languages (van Riemsdjik, 1978), White et al argue that the behaviour of these learners is in conformity with UG. Thus, on the basis of L1 influences alone, in the case of Malagasy learners of English and other learners whose L1 have same constraints against object extraction and extraction from DP Objects, the following extraction hierarchy may be predicted:-subject extraction < object extraction < extraction from DP Objects.

4.2 L1 Influence at the level of discourse

It has been found that L1 influence may operate at the level of discourse in the interlanguage. One of the frequently cited examples of this is the prevalence of topic-prominent constructions in the interlanguage of Chinese and Japanese learners. Several second language acquisition researchers (Huebner 1983; Sasaki, 1990; Schachter and Rutherford, 1989) have found that this common developmental phenomenon (Fuller and Gundel, 1987) is either prolonged or more prevalent in the interlanguages of those learners whose L1s are topic prominent languages.[8]

Similarly, the influence of discourse-pragmatic properties of focus-fronted Austronesian languages may influence the type of wh-questions which are formed in the interlanguage. In focus-fronted languages, noun phrases in sentence initial position may fulfil a restricted number of semantic roles (such as 'benefactor' 'recipient' or 'theme') with reference to specific verbs, or more specifically, specific verbal affixes (This will be illustrated in more detail in Chapter 3, Section 3.2). It is possible that the L2 learner whose first language is an Austronesian language soon realises that noun phrases in other languages do not have similar relationships with verbal affixes. However, learners may still be influenced by the L1 into 'focusing' certain noun phrases in sentence initial position. Focusing may serve the same discoursal function as topicalization of easing the communicative burden of the

[8] In languages which have a topic prominent orientation, the focus of finite basic sentences is the topic. Following the topic, is the comment which contains the verb (Li and Thompson, 1976).

learner by foregrounding the 'focused' noun phrase. Although focus as a basic syntactic structure has been widely recognised as a feature of Austronesian languages (Dahl, 1978; Ferrel and Stanley, 1979; Naylor, 1975, 1978; Weeda, 1991), to the best of our knowledge no research has yet been done with regard to its influence on the interlanguage.

4.3 Processing constraints

To ignore the influence of receptive processing constraints in the judgement of grammatical sentences, particularly in long-distance movement, would be unwise. For instance, according to linguistic theory, subject and object extraction from embedded clauses in the absence of a complementizer are both equally acceptable: the subject trace in an embedded clause is properly head governed by Agr in embedded COMP position and antecedent governed by the specifier of COMP while the object trace is lexically governed by the verb. However, Schachter and Yip (1990) found that native speakers readily accept object extraction from embedded clauses but fail to accept subject extraction from the same clauses. They found that proficient non-native speakers too favour object extraction from embedded clauses over subject extraction although there is no bias in their L1s in favour of object extraction.

Schachter and Yip suggest that this may be due to a processing preference in searching for the extraction site of the wh-element which predisposes both native and non-native speakers towards object position rather than subject position. They attribute the processing preference for object extraction to the nature of on-line processing and the potential garden path effects of embedded subject extraction. On-line processing refers to the notion that parsers assign structure to sentences as soon as they are heard, as a result of which sentences may be misanalysed. Garden path effects refer to initial incorrect parses which have to be abandoned and reanalysed. Following Frazier and Fodor (1978), Schachter and Yip assume that input is processed from left to right, with each new item being incorporated into a structural representation in accordance with a principle of Minimal Attachment:-

(3) Attach each new item into the current phrase marker postulating only as many syntactic phrase nodes as is required by the grammar (Frazier, 1987:520).

In other words this strategy requires that the parser attaches constituents, using as few nodes as possible. For instance where there is a possible choice between an NP and an IP, the parser is expected to attach an NP rather than an IP. When this strategy does not work, the parser is forced to 'backtrack' and reassign a structure which successfully analyses the sentence.

Schachter and Yip demonstrate that embedded subject extraction involves the parser in backtracking which demands extra processing effort. In contrast, no backtracking is involved in embedded object extraction, making it easier to parse. Thus, by drawing on the relative ease of processing embedded subject and object extraction, Schachter and Yip are able to account for the difference in acceptability between two grammatical extraction-types among learners and native speakers.

Where there are L1 influences against object extraction, the influence of processing constraints against embedded subject extraction may not be so clear: the relative ease of processing embedded object extraction over subject extraction may be nuetralised by the influence of L1 bias against object extraction. Thus far, the only empirical investigation of the effect of processing constraints on grammatical wh-extraction among L2 learners is among those whose L1s do not have a bias for object extraction; the judgement of L2 learners in whose L1s there is a bias against object extraction does not appear to have been investigated. However, what is eminently clear from the discussion so far is that judgements do not merely reflect competence but involve performance-related factors in the retrieval of this knowledge.

4.4 Level of embedding

Quintero (1992) has found that the ability of L2 learners to produce wh-questions of a particular extraction-type decreases as the level of embedding increases. She accounts for this in terms of the learnability principles of continuity and cumulative development (see also O' Grady, 1987). According to the principle of continuity, there is a cross-linguistic preference for items which combine to be adjacent to each other, for example for verbs to occur next to direct objects.[9] The principle of cumulative development refers to a developmental tendency to create a new

[9] Note that this principle independently supports an early non-movement stage.

grammar in stages, with each stage building on previous stages in an implicational relationship. Together, these principles conspire to predict that learners will find movement of the wh-element beyond the clause in which the gap is sited more difficult than local wh-movement.

To summarise this section: we have argued that several factors may influence the relative acceptability and production of grammatical wh-extraction. The influence of the L1 may work at two levels, discoursal and syntactic. We have suggested that the discoursal influence of focus-fronted Austronesian languages may influence the interlanguage of the L2 learner into producing a form of 'focus' question. At the syntactic level, L1 constraints may inhibit the learner from accepting certain forms of grammatical extraction. Among learners whose first language is one in which there is an L1 constraint against object extraction and two L1 constraints against extraction from DP Objects, learners may demonstrate the following extraction hierarchy in the acquisition of local wh-movement: subject extraction $\lesssim$ object extraction $\lesssim$ extraction from DP objects in local wh-movement. Processing constraints may also play a part in the relative acceptability of grammatical sentences: learners and native speakers have been shown to favour object extraction over subject extraction in embedded clauses. The factor of processing constraints may interact with L1 influence against object extraction to neutralise both effects. Finally, we have seen that due to learnability considerations, extraction within single clauses may be more acceptable than extraction from embedded clauses.

5 Developmental Studies in the Acquisition of Wh-Movement

In this section, we discuss common developmental patterns in the L1 and L2 production of wh-questions. Our discussion serves two purposes: firstly, we argue that evidence in the literature is consistent with a universal early non-movement stage in L1 and L2 acquisition. Secondly, following Zobl (1995), we suggest that uniformity of progress towards wh-movement among first and second language learners may reflect the continued accessibility of UG principles to the L2 learner.

At this point, it is important to recall that developmental patterns which are observed in production data may not reflect the current state of acquired knowledge:

productive accuracy may lag behind acquired knowledge. In this context, Sharwood Smith (1986:12) has posited that 'competence' orders may be distinct from 'control' orders. Nonetheless, developmental changes over time may be considered to be external manifestations of the acquisitional route which learners take in arriving at the target structure.

In their progress towards the target language, learners are likely to produce transitional constructions. These have been defined by Dulay, Burt and Krashen (1982:121) and cited in Ellis (1994) as the 'language forms learners use while they are still learning the grammar of a language'. By definition, these constructions are subject to dynamic changes in the interlanguage and may be replaced by other transitional constructions. While there may be considerable similarity in the developmental routes which learners from different language backgrounds take, some differences may be traced to learners from a particular L1 background. Other differences may reflect individual preferences or learning strategies.

Developmental patterns are formed by observing the stages through which a learner passes in order to arrive at a particular structure in the target language. Ellis (1994) makes a distinction between 'stage' and 'sequence': the former consists of 'a period during which learners use a particular form or structure in a systematic manner' while 'sequence' refers to the overall developmental profile. He also makes a distinction between strong and weak evidence for a sequence. Strong evidence for a 'sequence' occurs when it can be shown that an order or sequence is universal while weak evidence is found if it can be shown that it applies only to L2 learners from a specific L1 background.

It is only fairly recently that developmental studies have been carried out within the context of functional categories. In child language acquisition one of the most widely debated issues is whether there is a two-stage model of grammatical development in which an earlier lexical-thematic stage precedes the development of functional non-thematic categories which emerge according to a maturational schedule (Guilfoyle and Noonan, 1992; Platzack, 1990; Radford, 1990). The alternative view is that functional categories are on-line from the beginning (Deprez and Pierce, 1993, 1994; Hyams, 1992, 1994; Poeppel and Wexler, 1993). We will refer to the former as the Maturational Hypothesis and the latter as the Strong Continuity Hypothesis. An

intermediate view between these two positions is one which suggests that functional categories may be optionally present (Hoekstra and Jordens, 1994; Rizzi, 1994).

In second language acquisition (SLA), a parallel controversy hovers over the nature of the initial stage of the interlanguage. On the one hand, some researchers (Lakshmanan, 1991, 1993; Schwartz and Sprouse, 1994) assume the L2 equivalent of the Strong Continuity Hypothesis in suggesting that functional categories are projected in the interlanguage from the initial stages. Of this group, White further (1985, 1991b) argues that the initial stage is characterised by the transfer of parameterized values of the L1 into the L2. On the other hand, researchers such as Vainikka and Young-Scholten (1994) argue that the initial stage consists of only lexical projections from the L1. In between these positions, Eubank (1992) argues that both lexical and functional projections and the headedness features of these categories are transferred from the L1 into the interlanguage; values which are not transferred are those which are lexically driven, that is, which are instantiated by lexical learning. This view thus suggests that functional projections which do exist in the initial stages of the L2 may be incompletely specified.

Within the context of the acquisition of wh-movement, this controversy takes the form of whether functional categories are instantiated for movement in the initial stages. In wh-questions generated by movement, the wh-element is an operator positioned in the specifier of the Complementizer Phrase (CP) and coindexed to a trace while the auxiliary moves from the head of the Inflectional Phrase (IP) to the head of CP. Thus, wh-questions generated by movement entail the projection of IP and CP in the grammar. In wh-questions which are not produced by movement, the wh-element is not coindexed to a trace but merely adjoined to the highest projection which is present in the grammar, possibly IP. The point at issue then is what constitutes sufficient empirical evidence that CP has been instantiated for movement.

In discussing this issue, we will consider another unresolved question: whether the instantiation of functional categories is preceded by learning the associated lexical items or whether functional categories have to be projected before the associated lexical items may be acquired. The crux of this argument may be represented by the positions of Hyams (1992) and Platzack (1992). Taking the view that the child may have knowledge of functional categories before she has acquired the relevant lexical

items, Hyams (1992:45) argues that 'the premise that missing functional items = missing functional categories is difficult to maintain'. In contrast, Platzack's (1992:77) view is 'that to claim that there are functional categories present in the absence of any empirical evidence is dubious'. In other words, the issue may be viewed as whether or not functional categories may be projected in the absence of associated lexical items at the level of spell-out. Although these comments are made in the context of child language acquisition, they are equally relevant for second language acquisition.

Within the context of acquiring movement, the question that needs to be resolved is whether or not it is necessary for the heads of CP, matrix COMP in local wh-movement and matrix and embedded COMP in long-distance movement, to be lexically realized before we claim that CP has been instantiated for movement in the L2. In this section, we will note that both 'do' support and lexical complementizers which fill matrix and embedded COMP position respectively, emerge later than other manifestations of CP. More specifically, the questions concerning the role of lexical learning in the instantiation of CP for movement are: Is the presence of subject-auxiliary inversion (with auxiliary in matrix COMP) a prerequisite for local movement? Is the presence of lexical complementizers in embedded COMP a prerequisite for the acquisition of long-distance movement?

In this section, we discuss commonly observed developmental patterns within the framework of functional categories, particularly CP. We pay particular attention to the role of lexical learning in the instantiation of CP for movement in the L2. In so doing, we also draw on studies in L1 acquisition to discuss possible implications for L2 acquisition and note possible similarities between L1 and L2 acquisition. From the similarities observed, we conclude that the same knowledge source in L1 acquisition, that is, UG may continue to be accessible to L2 learners in the acquisition of wh-movement. Wh-movement may either be within a clause or beyond a clause. The former would constitute local wh-movement and the latter, long-distance movement. The developmental features in local movement are discussed in Section 5.1 and that of long-distance movement in Section 5.2.

5.1 Local Wh-Movement

The vast majority of the studies on L1 and L2 acquisition of wh-movement have concentrated on local wh-movement. Generally, the developmental patterns found in studies on the acquisition of interrogatives in both the L1 (Guilfoyle and Noonan, 1992; Ingram, 1989; Radford, 1990) and the L2 (Adams, 1978, Butterworth and Hatch, 1978; Pienemann, Johnston and Brindley, 1988; Ravem; 1968, Shapira, 1978; Wagner-Gough, 1978) reveal an amazing consistency. Additionally, Ellis (1984), Felix (1981) and Tang (1990) have found that classroom learners follow the same developmental pattern as naturalistic learners.

Generally, the studies cited above concur in their observations with the oft-cited, early study in child language acquisition by Klima and Bellugi (1966). Klima and Bellugi observed three stages of development. In Stage 1, no modals or auxiliaries were observed in declaratives or interrogatives, with wh-words appearing in sentence-initial position, without subject-auxiliary inversion (SAI). Klima and Bellugi observed that during this stage, the questions produced were formulaic, rather than productive. Yes-no questions involved only intonation, with no SAI. Stage 2 saw the appearance of auxiliary verbs with SAI in yes-no questions. However, wh-questions continued to occur without SAI. Finally, in Stage 3, target language wh-questions with SAI appeared. Additionally, these studies have found that SAI occurs first with copulas and then with modals in both yes-no and wh-questions. 'Do' support occurs later in sentences with main verbs and may or may not be inverted. Below, we consider local wh-movement in terms of whether or not subject-auxiliary inversion is present, the choice of inverted auxiliaries which are present and the empty category at the site of extraction.

5.1.1 Absence of Subject-Auxiliary Inversion

The observation that inversion begins in yes-no questions and that there is an absence of inversion in the first wh-questions has been made in the context of both L1 and the L2 acquisition studies of wh-movement.[10] We will consider two main

[10] In L2 acquisition, Wode (1978) and Cazden, Cancino, Rosansky and Schumann (1975) cited in Zobl (1980) have found that inversion occurred almost simultaneously in yes-no and wh-questions. However, no evidence has been yet been found of inversion in wh-questions before yes-no questions.

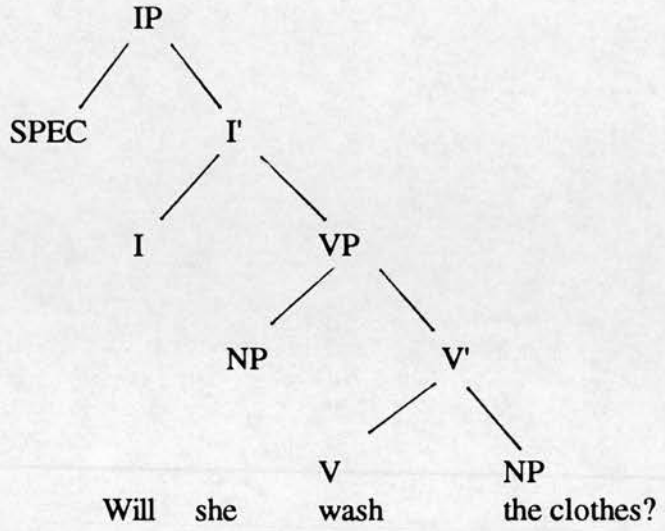
attempts to account for the lack of inversion, adjunction and the possibility of null auxiliaries, which have been made in the context of L1 acquisition but which are also applicable to L2 acquisition. We will argue that adjunction of wh-elements in sentence initial position and the presence of null auxiliaries in COMP are consistent with an early non-movement stage in the grammar.

5.1.1.1 Adjunction in L1 Acquisition

In this section we will demonstrate that both proponents of the Maturational Hypothesis and the Strong Continuity Hypothesis account for early wh-questions without positing movement of the wh-element. Proponents of the Maturational Hypothesis take the occurrence of questions with wh-elements but without SAI in Stage 1 as evidence of the absence of IP and CP. Stage 2 findings of the presence of SAI in yes-no questions but not in wh-questions are somewhat problematic for the view that a fully developed set of functional categories emerge more or less simultaneously. Radford (1992), arguing for the maturational hypothesis suggests that wh-movement may be optionally analysed by the child as either involving a substitution operation or an adjunction operation, with SAI occurring in the former but not in the latter. De Villiers (1992) believes that the child starts by adjoining either wh-words in wh-questions or auxiliaries in yes-no questions to the highest available projection and abandons this strategy when CP is available.

Guilfoyle and Noonan (1988), using an argument which draws on the VP-internal hypothesis (Koopman and Sportiche, 1988; Kitigawa, 1986) also suggest that learners may employ adjunction in wh-questions. They argue that in the production of yes-no questions, the auxiliary is base-generated in I and the subject within VP, but the subject fails to raise to Spec, IP. This is represented in (4):-

(4)



In the production of wh-questions, the wh-element is adjoined to IP.[11]

Roeper (1992), arguing for the Strong Continuity Hypothesis, also draws on adjunction as a means of accounting for the absence of SAI. He suggests that adjunction of elements which have not been syntactically categorised may be a common strategy used by children so that they can both convey semantic meaning and assign scope to sentences in which it is used. He outlines the following properties which characterise child grammar representation (1992:347):-

(5) (a) fixed position
(b) open scope relation
(c) unclear categorial character
(d) fixed lexical item.

In the case of negation which is the example that Roeper uses, the child uses the fixed lexical item 'no' in sentence initial position to convey meaning and assign scope to the utterance which follows. Prior to deciding if negation is a feature of a functional category or whether it has its own XP, Chomsky-adjunction which is represented below is available:-

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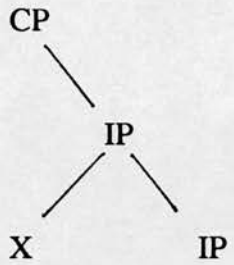
[11] Similarly, Deprez and Pierce (1994) find that the subject may optionally remain in VP-internal position. However, Hyams (1994) argues against the view of the failure of the subject to raise as a means of accounting for the absence of SAI by pointing to evidence of the correct placement of negation by the time uninverted questions are produced. Such evidence suggests that the subject has already moved from Spec, VP to Spec, IP.

(6)



By extension, it is conceivable that in wh-questions, the child would adjoin the wh-element to sentence initial position to convey the illocutionary force of interrogation until she has succeeded in categorially identifying the wh-element as it is represented in the target grammar. This approach is slightly modified by Penner (1991) cited in Roeper (1992) who argues that in early Swiss German, children adjoin a question clitic before it develops into a cleft form.

Taking an intermediate position between the view that functional categories are present from the beginning in early grammars and the view that they come 'on-line' according to a maturationally defined schedule, Hoekstra and Jordens (1994) argue for the view that functional categories may be optionally present. They make the important point that even if the lexical items which are associated with functional categories have been acquired, these may be identified and categorised as instantiating some functional category other than the relevant one. This may be the case whether or not the relevant functional category is already available. In other words, the mere acquisition of lexical items such as wh-elements, which are associated with a particular functional category cannot be taken as evidence for the availability of the category in the grammar. More to the point, the appearance of such items cannot be taken as evidence that wh-movement has been instantiated.

Hoekstra and Jordens argue that the strategy of adjunction may be used by the child prior to the instantiation of functional categories for movement. This is because it requires less information and is less restrictive than the other structural option of the functional element, X taking a projection as its complement and projecting its own phrase, XP. They view the occurrence of wh-expressions in embedded questions before the emergence of overt complementizers as evidence that the wh-elements are adjoined to embedded IPs instead of being part of a projection of CP, as in the target

grammar.[12]

5.1.1.2 Adjunction in L2 Acquisition

We have seen that the absence of SAI in wh-questions in L1 acquisition may be accommodated within the views that functional categories may or may not be already projected in the grammar at the time. If we may maintain that 'adjoin-alpha is a primary acquisition capacity' (Lebeaux, 1990 cited in Roeper, 1992) in second language acquisition as well as first language acquisition, then it is more than likely that in the absence of movement, the L2 learner too would adjoin wh-elements in sentence-initial position.

The findings of Schwartz and Sprouse (1994) strengthen the possibility that adjunction is part of the initial processes of second language acquisition. They found that the Turkish learner of German in their longitudinal study produced adjoined structures in their Stage 1. They argue that adjunction is a means of appending a new mechanism to an existing grammar, prior to the triggering of further syntactic structure for the L2. Along the lines of this argument, adjunction in wh-question formation in early L2 grammars is a way of 'building up' the structure of the grammar, prior to the triggering of CP for movement. Although the view of Schwartz and Sprouse is that the full clause structure of the L1 is available to the L2 learner, the possibility of wh-element adjunction is also compatible with the view that CP may not yet be projected in the interlanguage.

5.1.2 Presence of Null Auxiliaries in L1 and L2 Acquisition

In this section, we consider the possibility of the presence of null auxiliaries in C in apparently uninverted structures. Demuth (1992) argues that movement can only be licensed once null elements have been replaced by phonological material. According to this view, if null auxiliaries do occupy COMP position, then they are base-generated in this position rather than moved from INFL. If we maintain Demuth's claim that functional heads cannot be phonetically realized unless there is a 'slot' for

[12] They appear to assume that CP cannot be projected in the grammar until overt complementizers are present.

them to fill, then the presence of null auxiliaries in COMP may be a necessary preliminary to the occupation of COMP by appropriate or inappropriate lexical items. According to this view, individual variation in the transition to the next stage in which SAI becomes visible may be traced to the fact that some children are 'slot-fillers' while others may prefer to leave COMP empty. In the initial stages of L2 acquisition, this possibility of a fully specified projection of CP which is filled by null elements at the level of spell-out is also open, as is the possibility that some learners may be 'slot-fillers' while others may not.

5.1.3 Challenges to the absence of Subject-Auxiliary Inversion in early L1 and L2 Acquisition

However, the proposal of an early stage in which there is no SAI has not gone unchallenged in both L1 and L2 acquisition. In an extensive study in L1 acquisition, Stromswold (1990) reported that 93 percent of young children's wh-questions and 94 percent of their yes-no questions are correctly inverted. This contradicts Klima and Bellugis' findings of stages in which SAI is either not present or present only in yes-no questions.

In L2 acquisition, Lakshmanan and Selinker (1994) report that in their longitudinal study of Marta and Muriel, the copula and the auxiliary 'be' are preposed 100% of the time in wh-questions and 94% of the time in yes-no questions. Although we cannot rule out the possibility that there may be a stage prior to the period in which both studies were undertaken in which children encountered problems with SAI in first and second language acquisition, other aspects of early wh-questions must clearly be considered in order to argue convincingly for an early non-movement stage.[13]

5.1.4 Presence of Subject-auxiliary Inversion in L1 and L2 Acquisition

In producing target language subject-auxiliary inversion, the child and the L2 learner

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[13] Ellis (1994) cites studies in L2 acquisition in which beginning learners go through a 'silent period' before they begin to produce utterances; we may speculate that the mental representation of wh-questions during this period may also be uninverted.

have to determine the path of movement of the auxiliary; they have to discover both the categorial site from which auxiliaries originate as well as their destination. They also have to determine the choice of auxiliary which will satisfy licensing conditions between the Specifier and the head. The path taken by the auxiliary is a syntactic phenomena while the choice of the auxiliary involves lexical learning. We will consider each in turn, to the extent that both these aspects may be isolated.

5.1.4.1 Path of Movement

Within the context of child language acquisition, Roeper (1992) argues that the presence of an agreement morpheme in a functional category is an indicator that movement from a non-functional category must have occurred. However, the Agreement marker cannot locate the origin of movement, only indicate that movement has occurred. He further points out that in the absence of overt agreement, distributional evidence must both inform the child that movement has occurred as well as indicate its route beginning from its origin. Since agreement is minimal in English, subject-auxiliary inversion is more difficult in English, than, say in German, where it is considerably more noticeable. Thus, in English, inversion may have to be triggered for each individual auxiliary. This difficulty of tracing the path of movement of auxiliaries is equally applicable to second language learners.[14]

5.1.4.2 Licensing conditions

The child and the L2 learner also have to determine the appropriate auxiliary which will satisfy Spec-head licensing conditions in CP. In other words, the wh-feature in Spec, CP must be licensed by an agreement-marked, preposed auxiliary in C. Since

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[14] This task may be considerably lightened if we accept Hyams' (1994) argument (made in a different context in first language acquisition) that the default setting for the verb movement parameter is from V to C. She supports this claim by pointing to evidence in the literature from early German (Meisel and Muller, 1992) and Dutch (Frijn and de Haan, 1991) which show discrimination between finite and non-finite forms with only finite forms undergoing verb movement preceding NEGP, arguably to COMP. Other evidence which she uses in support of this claim are production errors in early Icelandic of verb movement from V to C in declaratives where the adult language requires V to I. Verrips and Weissenborn (1992) too strongly argue for movement from V2 to C from the onset based on their work in early German. In the context of second language acquisition, we need to investigate whether the default verb movement is also C.

the inverted auxiliary in wh-questions is normally unstressed, it may not be perceived. It may require considerable lexical learning before the child and the L2 learner are able to produce the appropriate auxiliary to express the AGR features which are required to license a particular wh-element. Roeper (1992) points out that the production of an inappropriate auxiliary in COMP position may indicate not that the learner has not succeeded in recognising an agreement morpheme but that she has simply not been able to produce the appropriate morpheme which licenses Spec, CP. This awareness of the distinction between 'recognition' and 'production' of lexical items is echoed by Demuth (1992) who distinguishes between the 'identification' and 'realization' of lexical items, arguing that syntactic structure is dependent on the former but not the latter. This is a distinction that is well worth noting for its recognition that the process of lexical learning is gradual rather than spontaneous. This would particularly apply to the heads of functional categories which are devoid of semantic meaning. Below, we will consider how licensing conditions are satisfied in L1 acquisition and L2 acquisition.

5.1.4.2.1 L1 Acquisition

Penner (1994) examines how licensing conditions may be satisfied in root questions in early German and early Bernese Swiss German. He presents evidence for a pre-CP period in which there is no overt wh-operator in specifier position. Instead, the wh-feature is expressed on a copular head, forming part of the verbal inflection in a null constant chain. The null constant chain consists of a clause external discourse binder which is phonetically empty and which binds an empty category, the null constant. The discourse binder is found in the shared knowledge of the speaker and the addressee. By means of such constructions, the child is able to express interrogativity within the limitations of a grammar in which CP has not been instantiated for movement. Penner notes that these limitations are considerable: the child has difficulty in correlating question patterns and semantic functions at the levels of both production and comprehension. In fact, there is a lack of referentiality in the wh-element which is reflected in its use even in yes-no questions.

Penner claims that the instantiation of the wh-feature on the copular verb accounts for the widely observed phenomenon of 'be' forms in inverted auxiliary position in early grammars, citing work done by Ingram (1989), Roeper (1990, 1991) and

Stromswold (1990) in first language acquisition. It may be possible that the predominance of 'be' forms in auxiliary position could simply be due to the fact that 'do' support, which is base-generated in Agr and moves to T and then C (according to Pollock, 1989) has simply not been acquired. However, if this was the case, then one might expect a random distribution of the auxiliaries 'be' and 'have' in inverted auxiliary position, since in Pollock's framework, both are base-generated in V. Thus, it is not only the empirical finding of 'be' forms in matrix COMP position noted in first language acquisition which supports Penners' explanation that the 'be' form is a copular head on which the wh-feature is expressed; it is the predominance of the 'be' form over any other auxiliary in COMP position which adds weight to his account. Added empirical support for Penner's view that the 'be' forms in early wh-questions may be part of null constant chains comes from the common finding in L1 acquisition of wh-movement that the first inverted structures in wh-questions occur in sentences with copulas. Thus, although subject-auxiliary inversion has apparently occurred, at least some of these questions may, in fact, be generated in the absence of wh-movement.

Penner also points out that cleft questions in some languages consist of relative clause-like structures with the wh-pronoun figuring as head noun. Like the discourse binder, reference of the relativized element is part of the background knowledge of speaker and addressee. Penner suggests that the awareness of such constructions may facilitate the production of null constant chains.

5.1.4.2.2 L2 Acquisition

Since the production of 'be' forms in inverted auxiliary position are a widely observed phenomenon in second language acquisition too (Felix, 1981; Hatch and Huang, 1978; Tang, 1990; Wode, 1978), we have to consider the possibility that at least some of these 'be' forms may be copular heads on which the wh-feature is expressed in a null constant chain before CP has been instantiated for movement. This possibility is particularly high when we recall the finding that, as in L1 acquisition, in L2 acquisition of wh-movement, the first apparently inverted wh-questions occur with copulas. Hatch and Huang (1978), for example, found that copulas were first treated as part of wh-elements while in Wode's (1978) study, 'wh-element + copula + subject' structures were common in Stage 1. Significantly, Tang

(1990) found a heavy reliance on the copula as a question operator.

It is possible that at least some of these structures may be unanalysed formulaic utterances but this would not account for Felix's (1981) and Tang's (1990) finding that learners undergoing formal instruction appeared to face problems distinguishing between yes-no questions and wh-questions. It will be recalled that Penner (1994) had found that child learners had a similar problem. While in child learners this may be attributed to cognitive immaturity, it is unlikely that L2 learners can not discriminate between the two types of questions for the same reason. However, if we adopt the view that these learners may also be generating questions through null constant chains, then this apparent lack of discrimination would follow; the presence of a clause external discourse antecedent of the null constant would make the distinction between wh-questions and yes-no questions less than clear.

However, it is also possible that some learners may continue to produce 'be' forms even after CP has been instantiated for movement in the L2, while lexical learning of the appropriate choice of auxiliary is in progress. This possibility may be strengthened by the observation that 'be' forms in COMP position continue to be produced after the learner has acquired referentiality for the wh-element, indicating that dependence on clause-external non-overt discourse operators is no longer necessary.

Thus, we have seen that the presence of 'be' forms in the L2 learner is consistent with the view that CP has not been instantiated for movement. The production of 'be' forms may be more prevalent if the L1 of the learner consists of cleft questions with relative clause-like structures of the sort that Penner describes. The predominance of these forms may be an instance of a language-specific feature prolonging the presence of a universal developmental characteristic of non-movement in the initial stages.

5.1.5 Absence of Extraction in L1 and L2 Acquisition

Other phenomena which have been observed in early developmental stages though not as frequently as the absence of SAI or the production of an inappropriate lexical item in matrix COMP is the absence of any apparent gap or the presence of

resumptive or residual pronouns. In first language acquisition, Nishigauchi, Otsu, and Takahashi (1984) cited in Nishigauchi and Roeper (1987), reported that when children were required to respond to the question 'A car is to ...?', they would do so with 'drive it' rather than simply 'drive.' By doing so, they fill a potential gap with a resumptive pronoun.

Within the context of L2 acquisition of relative clauses, the production of resumptive pronoun by beginning learners is well documented (Ard and Gass, 1983; Hyltenstam, 1984; Pavesi,1986). Quintero accounts for this by the learnability principle of continuity; since learners at lower levels of proficiency have a preference for continuity, they allow fewer gaps in their grammar. If we bear in mind that relative clauses are also generated by wh-movement and that wh-questions too involve discontinuous structures with gaps, then we may anticipate that at least some beginning learners who have not acquired wh-movement would be reluctant to leave gaps and fill extraction-sites with resumptive pronouns.

Another strategy which would avoid gaps would be the production of wh-in-situ questions. Brown (1968) observes that this is not a commonly observed phenomenon in first language acquisition; in the first wh-questions in child language, the wh-element is already preposed in sentence initial position. This may be due to the fact that the first wh-sentences have been observed to be formulaic. Alternatively, the frequency of wh-questions in the input and the saliency of the wh-element in sentence initial position may alert the child to the position of the wh-element. In White, Spada, Lightbrown and Ranta's (1991) study of question formation in French learners of English, few wh-in-situ questions were produced even though this is one of the options which the L1 allows. White et al suggest that this strategy of generating wh-questions may be perceived by learners as not being transferable. However, Tang (1990) found that her Chinese subjects produced wh-in-situ questions before preposing the wh-element in uninverted structures. She attributes this to the L1 influence of Cantonese. Thus, it appears that the influence of the L1 in the production of wh-in-situ questions by the learner has to be studied more closely.

5.1.6 L2 Acquisition of Prepositional Phrase Extraction

In developmental studies of prepositional phrase extraction, L2 researchers have noted the presence of an early stage in which the preposition is omitted (Bardovi-Harlig, 1987; Klein, 1993; 1995; Quintero, 1992). Bardovi-Harlig calls this phenomenon 'No-Prep' while Klein refers to the same phenomenon as 'Null prep'. Since natural languages only permit 'null prep' in non-movement constructions, it is generally agreed that its occurrence in early L2 grammars is indicative of an early non-movement stage.

Klein (1995) further asserts that since natural languages only permit 'null prep' in non-movement constructions and perhaps only in non-movement relatives, its occurrence in the L2 grammar constitutes a UG violation unless it can be shown that the L2 grammar is limited to non-movement relatives and possibly non-movement questions or null prep is actually more widespread in natural languages than she demonstrates. Taking the latter suggestion first, it is clear that the non-occurrence of null-prep in wh-questions in natural languages is an empirical question: the discovery of a single language which permits 'null-prep' in wh-questions would invalidate the claim that its occurrence in early L2 grammars constitutes a UG violation. This empirical matter aside, we maintain that there is sufficient evidence which suggests that early wh-questions are not generated by movement which may permit the presence of null prep within the bounds of UG. However, if we take the view that null prep is not permitted in wh-questions at all, whether or not they are generated by wh-movement, then its occurrence in early wh-questions can only be seen as a UG violation. However, we maintain that in the latter case, learners' ability to progress beyond 'null prep' points to the continued accessibility of UG.

Once the early non-movement stage has been passed, conflicting accounts have been found by second language acquisition researchers as to which form of prepositional phrase extraction is acquired earlier: preposition-stranding or pied-piping (Bardovi-Harlig, 1987; French, 1984; Mazurkewich, 1985; Quintero, 1992). Typologically, preposition-stranding is far less common than pied-piping and appears to be limited to a few Indo-European languages (van Riemsdjik, 1978). Implicationally as well, preposition-stranding is considered to be more marked than pied-piping in the sense that languages which allow preposition-stranding also allow pied-piping while the converse does not hold. Thus, linguistically, the typological rarity of prepositional

stranding and its implicational relationship with pied piping make it the more marked form. Mazurkewich argues that this markedness makes it a more difficult form to acquire than pied-piping while Bardovi-Harliq and Quintero have found the opposite. Quintero accounts for the earlier acquisition of preposition-stranding than pied-piping in her study by the learnability principle of conservatism, according to which learners will acquire those structures which are predominant in the input (preposition-stranding) earlier than those which are not (pied-piping). Thus far, it appears that the predominant influence in the acquisition of prepositional phrase extraction - saliency in the input or linguistic markedness - has not been established.

5.2 Long-distance Wh-Movement

In long-distance movement, the wh-element moves beyond its own clause to the Spec, CP of a higher clause. The stages of development in local wh-movement that we have considered in Section 1.1 such as the absence of subject-auxiliary inversion, learning of the licensing conditions in COMP which satisfy agreement with Spec, CP and the absence of extraction are all relevant to the acquisition of long-distance movement. Additionally, we will consider the attainment of long-distance movement with reference to the nature of the empty category and the acquisition of lexical complementizers. With respect to the former, we will consider some diagnostics which indicate that the empty category may not be wh-trace, which suggests that long-distance movement has not been acquired. We will also review the evidence for the late emergence of lexical complementizers, arguing that the absence of lexical complementizers should not be taken as evidence that CP is not projected in the grammar. We will also consider some of the transitional constructions which may be produced before long-distance movement has been acquired. Finally, we will consider the possibility that learners may avoid the production of long-distance movement although they may have already acquired it.

5.2.1 Nature of the Empty Category

In wh-questions produced by movement, the wh-element is an operator which binds a trace in the site of extraction. Wh-traces are [-anaphor, -pronominal], R-expressions which are subject to Principle C of Binding Theory. In order to determine whether wh-questions are generated by movement or not, some

researchers have sought to determine the nature of the empty category in wh-questions in the grammar. It has been suggested (de Villiers, Roeper and Vainikka, 1990; Nishigauchi and Roeper, 1987; Martohardjono and Gair, 1992) that in wh-questions which are not produced by movement the empty category is not trace but pro. Pro is [-anaphor, +pronominal] and subject to Principle B of Binding Theory. White (1992) has argued that the empty category may be a null resumptive pro, whose relationship with the wh-element is not subject to Subjacency since movement has not taken place. More recently, Rizzi has postulated the existence of another empty category, the null constant. As discussed in Chapter 1, Section 1.9.1, the null constant is [-anaphor, -pronominal] like the wh-trace but unlike it, it is [-variable]. We have already seen that Penner (1994) has suggested that root wh-questions in early Bernese Swiss German and Standard German may be null constant chains.

Below, we will consider the evidence for the existence of pro in early wh-questions with particular reference to sensitivity to strong crossover (see Section 5.2.1.1). We will also consider the evidence for other alternatives to the identity of the empty category. The underlying logic of doing so is that if it can be established that the empty category is not wh-trace, then this would constitute evidence in support of the argument for an early non-movement stage.

5.2.1.1 L1 Acquisition

Most of the studies in L1 acquisition which have aimed to determine if the empty category in early wh-questions is pro have tested subjects' sensitivity to strong crossover. If subjects are not sensitive to strong crossover, then this has constituted evidence that the empty category is pro; if subjects are sensitive to strong crossover, this has served as evidence that the empty category is wh-trace. We will begin by considering the basis upon which the failure to reject strong crossover violations has been used as a diagnostic for pro. If the empty category in the grammar is pro, which is subject to Principle B, then the child would make coreference connections between the wh-element, the pronoun and pro in strong crossover questions such as the following:-

(7) Who$_i$ does he$_i$ think pro$_i$ has a hat?

Accordingly, she would give the sentence the same semantic interpretation as the

bound variable question 'Who$_i$ thinks he$_i$ has a hat?'. In other words, she would interpret the question as requiring her to name the set of male individuals such that each of them thinks he has a hat. In contrast, if the empty category in her grammar is not pro but trace, the same question would be represented in (8) as:-

(8) Who$_i$ does he think t_i has a hat?

and the bound variable reading would not follow.

Nishigauchi and Roeper (1987) found that children are slow to master long-distance movement due to the absence of what they call an S-bar COMP node (which we may take to be embedded COMP). Since these children failed to observe strong crossover restrictions on coreference and permitted bound variable readings, Nishigauchi and Roeper argue that the empty category is not trace but pro. They suggest that with the introduction of the embedded COMP node in their grammar, children are able to convert trace to pro, produce successive cyclic movement and are sensitive to strong crossover restrictions on coreference.

De Villiers, Roeper and Vainikka (1990) view the acquisition of successive cyclic movement as taking place in three stages. The grammar in each of these stages is consistent with parametric variations of movement in natural languages. During the first stage, de Villiers et al argue that the inability of children to reject strong crossover violations is due to their perception of empty category as pro and not trace. Based on this evidence, they argue that movement is not present and that the wh-questions produced by children utilise the same mechanisms as topicalization. In the second stage, the grammar is consistent with languages in which there is local movement but not long-distance movement. This stage consists of two steps which children have to take before successive cyclic movement is acquired. The first step consists of movement of the wh-phrase only within the embedded clause while the second step consists of movement only within the matrix clause. In both these steps, the empty category is no longer pro but trace. Finally, in the third stage, children attain successive cyclic movement.

Thornton and Crain (1994) are critical of de Villiers et al's use of children's supposed lack of sensitivity to crossover restrictions as a criterion for determining that long-distance movement has not been acquired on learnability and empirical grounds. On

the learnability front, they argue that it is unlikely that children would be informed of the disparity between the semantic interpretation they assign to strong crossover questions and the interpretation that adults would assign to such questions. In the absence of such evidence, it is difficult to see how they would replace the bound variable reading of such questions with the adult reading of these questions. On empirical grounds, Thornton and Crain are critical of the evidence that has been used to argue that children treat crossover questions as bound variable questions. They agree with de Villiers et al that the only convincing evidence that children treat crossover questions as bound variable questions would be evidence that they assign 'multiple referents' to the pronoun in crossover questions. They argue that if the child assigns a single referent to the pronoun then it is possible that children may give 'accidental coreference' interpretations. This is made clearer in the light of the examples they use in (9):-

(9) Speaker: Who does he think has a hat?
(a) Hearer: Why he thinks HE does.
(b) Hearer: *Why he thinks he does and he thinks he does.

These examples illustrate that it is possible to assign an accidental coreference interpretation to a single referent of the pronoun in (a) but not to multiple referents of the pronoun as in (b).

In the light of these criticisms, Thornton and Crain carried out their own experimental investigation of children's sensitivity to the strong crossover constraint. In their experiment, they provided children of average age 4;2 with multiple referent responses to both crossover and bound variable questions. They found that children correctly rejected the multiple referent response to crossover sentences 86 percent of the time and accepted the multiple referent response to bound variable sentences 91 percent of the time. They conclude from these results that children are sensitive to strong crossover restrictions and by implication, that they perceive the empty category in such questions as trace and not pro, and are thus generating wh-questions by movement. They also argue that inversion is common in wh-questions, thus dismissing de Villier et al's claim that wh-questions are produced using the same mechanisms as topicalization. McDaniel and McKee too (1992) found that children of four to six years old are sensitive to strong crossover effects, indicating awareness that the empty category is trace.

In arguing in favour of the Strong Continuity hypothesis that long-distance movement is present from the onset, Thornton and Crain have not considered the possibility that there may be an early non-movement stage prior to the age at which the children were tested. It would have been noted that the youngest age of the children on which the above experiments were carried out was at four. We cannot rule out the possibility of an earlier non-movement stage before the stage in the grammar during which the children were tested. However, given that the nature of these experiments draw on quite sophisticated cognitive skills, it appears unlikely that any satisfactory results would have been obtained from children any younger than this age.

5.2.1.2 L2 Acquisition

The difficulty of designing experimental tasks for very young children is a drawback that much research in child language acquisition suffers from. In contrast, since beginning learners of a second language are usually relatively older, and cognitively more mature, experimental work in second language acquisition does not suffer this danger of missing out an early non-movement stage due to the cognitive immaturity of learners. Unfortunately, to the best of our knowledge, no research has yet been done on sensitivity to strong crossover in L2 acquisition.

What we can infer from the research in L1 acquisition is that under certain conditions, children are probably more likely to assign bound variable readings to sentences with strong crossover restrictions than adults. This tendency to assign bound variable readings may indicate the existence of an early acquisitional stage in which they perceive the empty category in long-distance questions as pro and not trace. This acquisitional phenomenon which is indicative of non-movement, may also be common to second language acquisition, particularly in those cases where the L1 does not instantiate wh-movement. We will now turn to empirical evidence in L2 acquisition, which indicates that the empty category in the initial stages may be pro.

We have already discussed Martohardjono and Gair's experiment in Section 1.3 which suggests that in the early stages of the acquisition of wh-movement, learners treat the empty category as pro and not wh-trace. The nature of the empty category during the initial stages of acquiring wh-movement is also discussed by White (1992)

who proposes that the empty category in early wh-questions may be null resumptive pro rather than pro. Her proposal stems from a dispute over Huang's (1984) claim that pro cannot be found in object position without object agreement. It will be recalled that this was the basis on which Martohardjono and Gair predicted that learners would perform better on subject extraction than object extraction. White cites three studies (Chung, 1984; Cole, 1987; Rizzi, 1986) which argue for the presence of null object pro. Further, she cites studies (Imai, 1983; Saito, 1985; Nakayama, 1988) which challenge Huang's analysis that in Chinese, Japanese and Korean, null objects bound to topics are variables. These studies argue that in Japanese as in Chinese and Korean, topicalization is base-generated and not constrained by Subjacency. This can be accounted for if the null object in topicalized sentences is not a variable but pro. Having thus argued that object pro is possible in natural languages, White goes on to cite examples by Sells (1984) for the presence of resumptive pro in relativization in marginally acceptable sentences in English and fully acceptable sentences in Japanese.

White proposes that L2 learners whose L1s allow object pro may perceive the wh-element to be base-generated and either subject or object gap to be filled by base-generated null resumptive pro. If so, then it is not surprising that they accept Subjacency violations since these structures are not derived by movement and hence, Subjacency is not relevant. Her analysis differs from Martohardjono and Gair's (1992) analysis in that she postulates that pro may be present in both subject and object position. It is similar to their analysis in that it recognises that wh-questions may not be perceived as involving movement in the early stages of L2 acquisition.

White goes on to account for the partial success of learners' ability to reject Subjacency violations by the proposal that learners may have two ways of generating English wh-structures, by movement and by base-generation. In the former, the empty category is trace which is subject to Subjacency, while in the latter it is pro. When learners perceive Subjacency violations to be generated by movement and the empty category to be trace, they reject such sentences whereas when they perceive the wh-element in such constructions to be base-generated and the empty category to be pro, they accept them. Given that natural languages such as Korean and Japanese allow both possibilities, such learners are conforming to the options which are allowed by UG in their interlanguage.

To summarise this section, it appears that the empty category in embedded clauses of early wh-questions in L1 and L2 acquisition may not be wh-trace. However, the identity of the empty category is not clear: the possibilities which have been suggested in the literature are pro and null resumptive pro. What is clear is that to the extent that it is established that the empty category is not wh-trace, the argument that early wh-questions are not generated by movement is supported.

5.2.2 L1 and L2 Acquisition of Lexical Complementizers

Since lexical complementizers head subordinated clauses as fillers of embedded COMP, their emergence in the grammar has naturally been fodder for the argument on whether lexical learning precedes the instantiation of functional categories or whether it is necessary for functional categories to be instantiated before they are acquired. Three considerations have played a crucial part in this debate. These are the observations that lexical complementizers emerge late relative to other manifestations of CP, that there is a need to distinguish between the acquisition of complementizers and complementation and that null complementizers may be present in the grammar. Each of these will be discussed in turn.

5.2.2.1 Late Emergence

Cross-linguistic observations from L1 and L2 acquisition strongly suggest the generalisation that lexical complementizers appear late, usually after the production of subordinated clauses. In L1 acquisition, Meisel and Muller found that no complementizers were produced by the French-German bilingual children they studied before the ages of two and a half to three years old. Further, even when they did appear, Meisel and Muller believe that they were not analysed as head of CP but as prepositions. In early Swiss German, Penner (1991) found the first lexical complementizers in relative clauses and then V2, with no subordinated conjunctions. Roeper (1992) found that in early German, it is the verb position rather than the complementizer which marks the clause as subordinate and notes that this is particularly surprising since in the target grammar, complementizers are obligatory in embedded clauses. In Sesotho, which manifests two reflexes of subordination in relatives, a complementizer and a verb-marker, Demuth found that only the verb marker appeared in subordinate clauses. Other researchers who have noted the late

appearance of overt complementizers in child grammars are Deprez and Pierce (1994), Hyams (1994) and Radford (1990).

In L2 acquisition, the late emergence of complementizers has been noted in the longitudinal case studies of Lakshmanan and Selinker (1994) and Grondin and White (1993). Lakshmanan and Selinker note that other manifestations of COMP such as SAI are present in both yes-no questions and wh-questions prior to the appearance of the tensed complementizer. They found that both their French and Spanish subjects produced tensed embedded declaratives fairly early relative to the appearance of the complementizer. Like Penner, they too found that when complementizers first emerged they occurred in relative clauses. The lack of the tensed embedded complementizer is all the more surprising if one considers that in both these studies, the L1 of the subjects requires the tensed complementizer to be obligatorily present. Thus, the acquisitional characteristic of late emergence of the complementizer which was noted in early child language overrides the influence of the L1 in second language acquisition in this respect.

5.2.2.2 Distinction between Acquisition of Complementizers and Complementation

The need to distinguish between the acquisition of subordinated clauses and the acquisition of complementizers is strongly argued for by Hyams (1994) in the context of child language acquisition. She points out that the former is a semantic/syntactic phenomenon while the latter involves lexical learning. Thus, it is hardly surprising that the child may have knowledge of the CP structure of complements while not producing lexical complementizers. This is partly due to the fact that the choice of complementizer depends on selectional properties of certain verbs which must be learnt. The examples which Hyams uses are 'try' which selects <-tense> complementizer and 'think' which selects <+tense> complementizer. Lexical learning is thus required to determine which verbs select propositional arguments, and which complementizer is appropriate for a particular complement. Given that complementizers lack semantic content and referentiality, it is not surprising that their emergence in the grammar is delayed.

While the L2 learner may have knowledge of complementation from her L1, she too has to undergo much the same process of lexical learning as the child with regard to

learning the verbs which subcategorise complements, the nature of the complements that they subcategorise and the appropriate lexical complementizers. Ard and Gass (1983) have noted that beginning learners may transfer L1 knowledge of lexical items and their syntactic frames into the L2 in order to maximise the linguistic resources which are available to them. Thus, if the subcategorization properties of lexical verbs such as 'try' and 'think' in the L1 coincide with those of the L2, transfer of these properties will facilitate acquisition, whereas if they do not, acquisition will be hindered.

5.2.2.3 Null Complementizers

Hyams (1994) suggests that COMP may contain a null complementizer which is not spelt out at the level of PF. In first language acquisition, this possibility is supported by the well-documented ability of the German-speaking child to not overgeneralize the verb-second requirement for matrix clauses to embedded clauses (Clahsen, 1986; 1991, Meisel and Muller, 1992, Weissenborn, 1990). In the adult grammar, COMP position would be occupied by an overt complementizer. The production of verb-final subordinate clauses in the absence of an overt complementizer suggests that it is possible for a null complementizer in COMP to block inversion.

The view that a null complementizer may fill COMP is shared by Lakshmanan and Selinker (1994) for L2 acquisition. Lakshmanan and Selinker suggest that the presence of the null complementizer in tensed embedded declaratives in the learners may be due to the nature of the input in which non-overt 'that' was more common than overt 'that'. The other possibility is that subjects may know that the presence of the complementizer is optional in English and may merely be demonstrating a preference for the non-overt form. However, they dismiss this latter explanation since not even a single overt complementizer is produced by their subjects in the early stages and conclude by suggesting that the complementizer in tensed embedded clauses is obligatorily null.

5.2.2.4 Role of Lexical Complementizers in Long-distance Wh-Movement

Each of the considerations discussed above strongly suggest that CP may be present in the grammar before lexical complementizers have been acquired. In a broader

context, they contribute evidence to the argument that functional projections may be present in the grammar before the lexical items which fill their heads are acquired. However, the fact that at least some syntactic operations are dependent on the phonetic realization of the complementizer is suggested by Meisel and Muller's finding that complementizers emerged at the same time as reliable verb movement to C in early German. De Villiers (1992) also reports that in early German, Swedish and Swiss German, the appearance of lexical complementizers appears to be the final trigger for verb movement to CP in the matrix clause.

It is possible that long-distance wh-movement too may be dependent on the realization of lexical complementizers at the level of spell-out. This may be due to the possibility that it signals the presence of an escape hatch in embedded Spec, CP through which the wh-phrase may pass through in order to reach sentence-initial position. This is in accord with Verrips and Weissenborn's (1992) view within the context of L1 acquisition that the acquisition of lexical items serve as a trigger not for the emergence of a functional category but for movement into existing positions.

In the case of the L2 learner, projections with the appropriate labelling may already be present in the grammar but not spelt out at the level of PF, as in the case of null complementizers discussed in Section 5.2.2.3. The acquisition of lexical complementizers may trigger a path for movement of the wh-phrase to sentence initial position through embedded Spec, CP which may otherwise not be evident (cf Eubank, 1992). In this sense, the acquisition of long-distance movement may be lexically driven.

To summarise then, the evidence suggests that CP is projected in the grammar before the acquisition of lexical complementizers but the acquisition of long-distance movement may be dependent on the acquisition of lexical complementizers. The acquisition of lexical complementizers involves both acquiring the appropriate lexical item as well as categorially identifying it as occupying embedded COMP. Note that the realization of lexical complementizers may be a necessary but not sufficient condition for the attainment of long-distance movement since it is necessary for the learner to realise the presence of an escape hatch in embedded Spec, CP for the wh-element to reach sentence initial position.

5.2.3 Transitional Constructions in L1 Acquisition

Before acquiring long-distance movement, it has been observed that children may produce transitional constructions (de Villiers, Roeper and Vainikka, 1990; Thornton and Crain, 1994). These constructions may give us an insight into the processes through which long-distance movement is acquired. One such construction is the 'medial' wh-question in which there is matching of the wh-phrases at the front of the matrix and the embedded clauses. These phrases have been argued by McDaniel (1986), cited in Thornton and Crain (1994) to be instances of long-distance movement. An example of such a question is:-

(10) Who do you think who is in the box?

These constructions were produced by about a third of the 21 three- and four-year old children in Thornton and Crain's elicitation experiment.

Less commonly produced by the children in this experiment were constructions in which the wh-phrase moves only as far as Spec, CP of the embedded phrase and in which a scope marker is base-generated in matrix Spec,CP. The question in (11) is an example:-

(11) What do you think who ate this?

These constructions have been argued by McDaniel to be a 'partial movement' option.

Since both 'medial' wh-questions and 'partial movement' constructions appear in German and Romani dialects, Thornton and Crain suggest that children have other movement options allowed by UG available to them than that which is permitted by the target grammar. Given the similarities that we have observed in L1 and L2 acquisition of wh-movement and assuming the continued accessibility of UG, It is possible that L2 learners too may produce transitional constructions which indicate that they have more movement options than that permitted to them in the target grammar.

5.2.4 Avoidance of Long-distance Wh-Movement in L2 Acquisition

The other possibility is that where possible, the L2 learner may avoid producing long-distance questions, producing only questions which involve local movement. The phenomenon of avoidance was first noted by Schachter (1974) in her study of the acquisition of relative clauses, in which she noted that the group of Arabian and Iranian learners produced more errors than the group of Chinese and Japanese subjects although relative clauses existed in the L1s of the former group. Finding that the former group also made more attempts to produce relative clauses, she concluded that the latter group were avoiding producing relative clauses and therefore produced fewer errors. If we bear in mind that relative clauses also involve a form of wh-movement, then we may anticipate that L2 learners whose L1s do not instantiate wh-movement may also avoid long-distance movement.

One of the ways in which they may do this is by producing short questions. We may further predict that these short questions may have characteristics which have already been noted in the acquisition of local wh-movement in Section 1.1 such as the absence of inversion, the choice of an inappropriate auxiliary where inversion is present or the presence of resumptive pronouns. Since we have already noted that learners may produce local wh-movement before long-distance movement in Section 4.4, we may predict that at least some of these questions will be target language short questions.

However, to simply assert that the short questions which learners produce when required to produced long-distance movement are the manifestation of an avoidance strategy may be to over-simplify the phenomenon of avoidance. Seliger (1989), cited in Ellis (1994), makes the important point that one may only claim that a particular structure is being avoided if one can demonstrate that the learner has knowledge of the structure. Also, it must be demonstrated that native speakers would use the structure within the same context. Accordingly, if we wish to claim that short questions produced within a particular context are the manifestation of avoidance, we should demonstrate firstly, that learners have knowledge of long-distance movement and secondly, that native speakers produce long-distance movement within the same context.

To summarise this section: we have argued that the commonly noted developmental

features in local movement such as the absence of SAI and 'be' forms in COMP position are, at the least, consistent with an early non-movement stage. The absence of extraction, which may be manifested in resumption and wh-in-situ questions constitutes stronger, less ambiguous evidence that wh-movement has not taken place. Other evidence which suggests that wh-movement has not been acquired is the occurrence of 'null prep' in the initial stages of prepositional phrase extraction. In wh-questions with embedded clauses, some evidence suggests that in the initial stages, the empty category may not be wh-trace and hence may not be the result of movement. We have also seen that the absence of overt complementizers should not be used as evidence that CP is not projected in the grammar. Even once CP is projected and overt complementizers do emerge, long-distance movement may not have been acquired. Until long-distance movement has been acquired, the learner may either produce transitional constructions or short wh-questions which may or may not be generated by movement. Thus, we may conclude that many of the developmental features in local and long-distance movement in L1 and L2 acquisition are strongly suggestive of an early non-movement stage. We may also conclude that there are many similarities in the developmental patterns produced in L1 and L2 acquisition of wh-movement, which suggest a common knowledge source, that is, UG.

6 Movement Towards Wh-movement: Reanalysis of the Grammar

In this section, we discuss the nature of change in the grammar and possible stimuli for change. We then consider the possibility that the nature of the progression towards movement may be reflected in interlanguage constructions in which features which are consistent with both movement and non-movement co-occur. Finally, we consider the possibility that the ultimate level of attainment of highly proficient learners or near-native speakers may differ from those of native speakers.

6.1 The Nature of Change

Broadly, there are two main views concerning the nature of language change- that it may be sudden or gradual. Parametric accounts of language acquisition tend to argue that once a functional category has been instantiated for a particular language,

associated with that category suddenly emerge. Meisel (1992) for instance, argues that once COMP and its projection has been instantiated for a particular language, the features which are associated with it - subject-auxiliary inversion in questions, fronted wh-phrases, constituents which are placed in Spec, CP position, complementizers, subordinate clauses, including relative clauses and long-distance movement - should emerge at about the same time.[15]

In contrast, the view of grammatical development which draws on learnability principles such as continuity, cumulative development, conservatism and generalization (O' Grady, 1987; Quintero, 1992) sees changes as gradual. Within this view, grammars increase incrementally with learners forming conservative hypotheses and building on existing knowledge to form more and more complex structures. Thus, transitional constructions are gradually replaced by other transitional constructions in conformity with the input of the target language. Generalizations, both correct and incorrect are made by extending knowledge of a particular rule for a lexical item to other lexical items. When correct, these generalizations facilitate the acquisitional process; when incorrect, learners have to unlearn or 'retreat' from the overgeneralization. The 'retreat' from overgeneralization may also be a process of gradual realization of the limits on the applicability of certain rules. It is also worthwhile stating that parametric change and gradualness of grammatical development are not incompatible in view of limitations in productive processing.

Investigating representations of unaccusativity in native and non-native grammars of Italian, Sorace (1992) classifies developmental changes as either belonging to the 'more or less mode' or to the 'either/or' mode. In the former, change is gradual while in the latter, it is discontinuous. She finds that the acquisition of lexical-semantic structures follows a pattern of gradual development, while restructuring of some syntactic properties related to unaccusativity takes place abruptly. This suggests that lexical learning may be a gradual process based on hypothesis testing and possible generalization while syntactic change may be instantaneous and dramatic. We may

[15] However, Robertson (1992) has cautioned that the absence of any of these cannot be interpreted as evidence that COMP has not been instantiated as it may be possible that some consequences of instantiation may take a longer time to compute than others.

speculate that the suddenness of syntactic change may be due to a dependence on the completion of a gradual process of lexical learning. It also leaves open the possibility that while syntactic change may be triggered instantaneously at the level of competence, learners' ability to produce grammatical sentences in which the appropriate lexical items are realized may be delayed.

6.2 Triggers for Change

The nature of change in the grammar is closely associated to the nature of the stimulus which triggers movement. Some studies in child language acquisition have suggested that it is long-distance movement which provides the learner with the necessary stimulus for change. One of these studies is that of Weinberg (1991) cited by deVilliers (1992). Weinberg suggests that it is the presence of the complementizer in embedded COMP which provides the stimulus for wh-movement. She suggests that children assume that the doubly filled COMP filter which prohibits CPs containing a head and specifier in embedded contexts, also applies in matrix clauses. This, according to Weinberg, causes them to produce uninverted questions until they discover that the doubly filled COMP filter does not apply in local wh-movement; it is only then that they will allow SAI in matrix questions.

Another study which suggests that the stimulus for movement is long-distance movement is that of deVilliers (1992). From a study of the longitudinal data collected from seven children, de Villiers found that after an increase in the frequency of 'why', 'how' and 'what' as embedded wh-complementizers, appropriate inversion of these words occurs in the matrix clause. She infers from this that through noting the presence of the wh-complementizer in the embedded clause, the child realises that the lexical item fills Spec, CP in the embedded clause. The child then assumes that Spec, CP must also be present in the matrix clause and the auxiliary can now move to COMP.

Yet another account which suggests that the trigger for change is to be found in long-distance movement is that of Nishigauchi and Roeper (1987). They suggest that it is the child's attempt to provide a representation for long-distance movement which forces her to the realisation that the empty category cannot be pro since according to Principle B, it would not permit long-distance movement. When the

introduction of embedded COMP licenses movement, the wh-phrase is allowed to move from embedded clause to sentence initial position. This analysis is based on the assumption that change in the interlanguage is inherently motivated to achieve consistency in representation; the underlying logic seems to be that the interlanguage will not tolerate different identities for the empty category in local and long-distance movement. This assumed intolerance in the interlanguage towards inconsistent representation is clearly a matter for empirical investigation.

What the three studies above have in common is the view that it is embedded CPs which precipitate the target language representation of local and long-distance movement in the interlanguage. This view is contrary to Lightfoot's (1991) view that it is unembedded, readily available input which triggers change associated with a particular parameter. This view would gain considerable credibility if it can be demonstrated that local and long-distance movement are simultaneously or almost simultaneously acquired.

6.3 Movement towards the Target Grammar

The observation that learners may not consistently conform to either the values of the L1 or those of the L2 has been captured by various researchers in terms of indeterminacy (Sorace, 1988, 1990), mutually coexisting parameters (Schwartz and Gubala-Ryzak, 1992) and optionality in the grammar (Eubank, 1994). In the case of L2 learners whose L1 does not instantiate wh-movement, this state of non-conformity to either grammar may be manifested by the production of constructions which consist of movement and non-movement features. For example, target language SAI (suggesting movement from INFL to COMP) may co-occur with null-prep (suggesting non-movement) within a wh-question. Another example is the occurrence of target language SAI (indicating movement) and resumptive pronouns (indicating that the wh-element is base-generated). Thus, whilst the presence of all the properties of the target grammar which are associated with wh-movement in wh-questions reasonably suggests that movement has been acquired, the absence of any of these properties does not imply that the shift towards movement is not already in progress.

6.4 Ultimate Attainment

The question now arises as to what one may reasonably anticipate to be the ultimate level of attainment that learners can reach. Studies which have been carried out in this area have reached conflicting conclusions. On the one hand, Neufield (1978) shows that near-native speakers can achieve native speaker pronunciation, the aspect of language learning which L2 learners usually find the most difficult to acquire. Birdsong (1992) too finds no significant difference between near-native speakers and native speakers in the grammaticality judgement tests that he carried out. This is supported by White and Genesee (1995) who used a rigorous selection procedure for near-native speakers and found no significant difference in terms of the accuracy and speed with which they responded to grammatical and ungrammatical sentences when compared to native speakers. On the other hand, Coppieters' (1987) purports to show that the grammaticality judgements of what he categorises as near-native speakers are clearly dissimilar from those of native speakers. Other researchers show that the ultimate attainment of near-native speakers is similar to native speakers in some respects but differs from them in other respects. For instance, Sorace (1992) finds that while that the acquisition of lexical-semantic structures of unaccusative verbs gradually approximates those of native speakers, some syntactic properties related to unaccusativity do not seem to be ever acquired.

One of the challenges of L2 acquisition research is to provide principled explanations for the similarities and differences between near-native subjects and native speakers. It is possible that at least a few of the differences may arise from the difficulty of overcoming certain L1 constraints. This difficulty may arise when there is more than one L1 constraint against a particular syntactic movement in the L2, as with the case of extraction from DP Objects which is prohibited by two L1 constraints in Malagasy but allowed in English (Section 4.1). Another area in which difficulties in the L1 may arise is when language specific possibilities in the L1 interact with UG constraints. For instance, as has been noted in Uziel's study in Section 2.2.2 since Italian L1 learners, like other learners, do not receive any input of what is not grammatical, the presence of language specific possibilities such as pro in subject position in sentences which violate Subjacency may bias them towards a greater acceptance of these sentences than native speakers even at the near-native level.

Conclusion

In this chapter we reviewed the literature on the continued accessibility of UG principles in L2 acquisition with particular reference to the acquisition of wh-movement. We began by describing some fundamental concepts in L2 acquisition. Then, in Section 1, we argued that learners are able to reject Subjacency and ECP violations when they have acquired wh-movement. In Section 2, we argued that on acquiring wh-movement, intermediate learners are able to reject Subjacency violations according to the strength with which they are violated and according to whether the ECP is violated as well. In Section 3, we argued that learners are able to discriminate between grammatical and ungrammatical wh-extraction in conformity with UG but that this ability appears to be influenced by factors such as the availability of positive evidence in the input. In Section 4, we argued that learners may find some forms of grammatical wh-extraction more acceptable than other forms of grammatical wh-extraction due to factors such as L1 influence, processing constraints and learnability considerations. We argued that assuming the continued accessibility of UG, with continued exposure to the L2, learners will be able to overcome L1 influences and learnability considerations. However, like native speakers, their acceptance of grammatical sentences is likely to be influenced by processing constraints. In Section 5, we described commonly observed developmental patterns in L1 and L2 acquisition within the context of functional categories, noting that the evidence is consistent with an early non-movement stage. We noted similarities between the two forms of acquisition, suggesting that L1 and L2 learners are guided by the same knowledge source. On the basis of the other forms of evidence described in Section 1 to 4, we take this knowledge source to be UG. We also discussed the controversy over the role of lexical learning in the instantiation of functional categories for the target language. Finally, in Section 6, we discussed the nature of change and possible stimuli for change, noting the existence of a period during which learners may produce constructions in which movement and non-movement features co-exist. Assuming the continued accessibility of UG in non-native grammars, we concluded this section by discussing the level of ultimate attainment that we may reasonably expect of L2 learners.

In the next chapter, we describe the contrasts in the generation of wh-questions between Malay, the L1 of the learners in this study and the target language, English. Chapter 4 will describe the language background of the learners. Together with the

linguistic concepts which have been described in Chapter 1 and the pycholinguistic concepts which have been described in the current chapter, these chapters will form the basis for the formulation of our experimental hypotheses in Chapter 5.

Chapter 3

Contrastive Analysis of Wh-Question Formation in Malay and English

Introduction

In this chapter, we will discuss the formation of wh-questions in Malay and English. We will account for the differences in the generation of wh-questions between the two languages within the optionality that is provided by Universal Grammar (UG). In English, wh-questions are generated by movement at S-structure while in Malay, wh-questions are generated in the absence of movement at S-structure. We will then illustrate some of the consequences which arise from this fundamental difference. We will also discuss some aspects of the discourse orientation of Malay.

1 Some Linguistic Features of Malay

We begin by describing some typological properties of Malay before proceeding to the properties of its functional categories. We will pay particular attention to the Complementizer System in order to describe wh-question formation in this language. We will present an account of wh-question formation which argues that wh-elements are not moved to sentence initial position but base-generated in sentence initial position. The consequences of this analysis are then described.

1.1 Typological Properties of Malay

Malay, like English, is an SVO language: the basic word order in a declarative sentence is Subject-INFL-Verb-Object. It has three main sentence construction-types: the active, the subjective passive and the canonical passive.[1] The direct object follows the verb while the indirect and oblique NPs typically occur with prepositions. Intervention between the verb and the direct object and between the preposition and its object NP is not permitted; prepositions and verbs are considered to be Case assigners which cannot be moved away from its Case assignees (Salleh, 1987). There

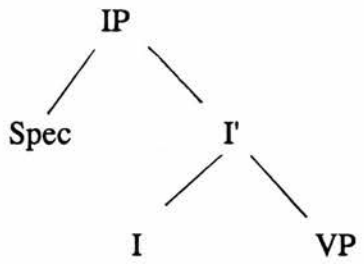
[1] For a description of these construction-types see Guilfoyle, Hung and Travis (1992) who account for these three construction-types by postulating the presence of two subject positions at S-structure, Spec, IP and Spec, VP.

are no overt case-markings on the NPs nor any overt agreement between subject NP and the verb. Tense is often expressed by context, verbs of time or auxiliaries. Hence, the verb is not marked for any tense or agreement inflection.

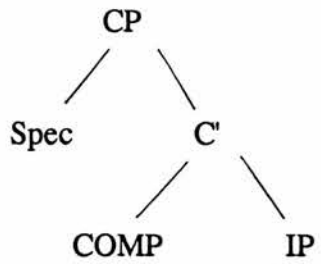
1.2 Properties of Functional Categories in Malay

INFL represented in (i) and COMP in (ii) project in the same way in Malay as in English.

(1)

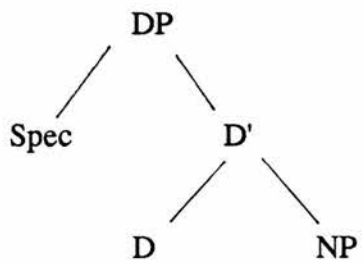


(2)

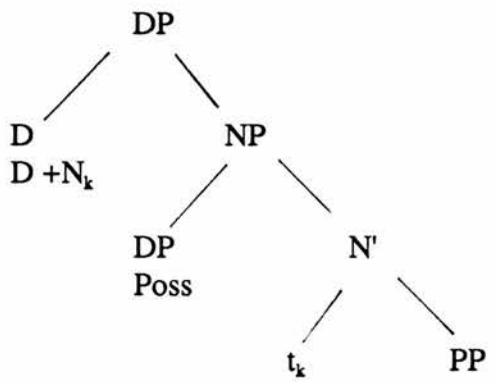


However, the projection of DP in English and Malay is dissimilar: in English, the head of DP, like the heads of IP and CP, project into Specifier and complement positions as is represented in (3) below:-

(3)



(4)



In the projection of DP in Malay, represented in (4), the lexical head N (noun) moves to the functional head, D. This results in the NSO order in which the possessor immediately follows the head N and precedes any PP complements to N. It should also be noted that unlike IPs and CPs in Malay and English, and the projection of DPs in English, DPs in Malay lack a specifier position (cf.. White, Travis and Mclachlan, 1993).

2 The Complementizer System in Malay

Like English, the Complementizer system dominates both tensed and untensed subordinate clauses as well as wh-questions, topicalized structures and relative clauses.

2.1 Subordinate Clauses

There are two main types of complementizers in subordinate clauses in Malay, those which introduce tensed clauses and those which introduce untensed clauses. The complementizer 'bahawa' is similar to the complementizer 'that' in English in that it introduces tensed embedded clauses. As with 'that' in English, it may be deleted.

(5) John percaya[$_{CP}$ bahawa[$_{IP}$ Ali sudah membaca buku itu]]
John believes that Ali has ACT[2]-read book the
'John believes that Ali has read the book.'

(6) John percaya[$_{CP}$[$_{IP}$ Ali sudah membaca buku itu]]
John believes Ali has ACT-read book the
'John believes Ali has read the book.'

Untensed or infinitival clauses are introduced by 'supaya', 'bagi' or 'untuk'.[3] In these constructions, the presence of the complementizer 'supaya', 'bagi' or 'untuk' is obligatory.

---

[2] The following abbreviations are used in the linguistic illustrations of Malay and English in this chapter:-

CP	Complementizer Phrase
IP	Inflectional Phrase
COMP	Complementizer
ACT-	Active morphology
PASS-	Passive morphology
LOC-	Locative
-Q	Question-marker
Poss-	Possessive
O	empty Operator
ec	empty category
ints	intensifier
3s	3rd person singular

[3] The presence of aspectual auxiliaries indicating tense in the clauses introduced by these complementizers would make sentences ungrammatical, strongly supporting the suggestion that these complementizers only introduce infinitival clauses.

(7) Saya berharap supaya Ali pulang.
I hope for Ali return.
'I hope for Ali to return.'

(8) Adalah susah bagi Ahmad pulang.
be-INTS hard for Ahmad return
'It is difficult for Ahmad to return.'

(9) Bagi Rahim untuk pulang adalah susah.
for Rahim to return be-INTS difficult.
'For Rahim to return is difficult.'

2.2 Wh-Questions

In this section we consider the types of wh-questions and the manner in which wh-elements are generated.

2.2.1 Types of Wh-Phrases

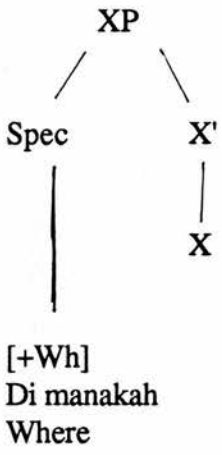
Wh-Phrases in Malay include 'apa' (what), 'siapa' (who), 'bagaimana' (how), 'mengapa' (why), 'di mana' (where) etc. These are usually suffixed by a question-focus suffix, 'kah'. As in English, these may consist of noun phrases as in (10) or (11).

(10) Manakah akan awak lawat dulu?
Where will you visit first
'Where will you visit first?'

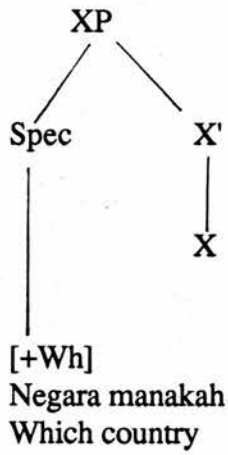
(11) Negara manakah akan awak lawat dulu?
country which will you visit first
'Which country will you visit first?'

The wh-phrases are represented in (12) and (13) as:-

(12)



(13)



However, unlike English, extraction from DPs is not permitted in Malay. For example (14) shows that extraction from a DP object containing a PP within it ([NP PP]) to form a pied-piping structure is not permitted.

(14) *Kepada siapakah mesti Ali memberi bunga itu
To whom must Ali ACT-give flower the
'To whom must Ali give the flower?'

Preposition-stranding is also not permitted in Malay, as is illustrated in (15).

(15) *Siapakah boleh saya beri bunga ini kepada?
who-Q can I give flower this to
'Who can I give this flower to?'

The constraint against pied-piping or preposition-stranding may be attributed to the absence of a specifier position in DP which prevents extraction from DP Objects (cf. White, Travis and Maclachlan, 1993).

2.2.2 Base-generation of Wh-elements

In wh-questions such as (16) and (17), the wh-word appears to be base-generated in situ.

(16) Siapa baca buku?
who read book
'Who read the book?'

(17) Ali baca apa?
Ali read what?
'What did Ali read?'

This is supported by the fact that object extraction in simple and embedded sentences is ungrammatical.

(18) *Apakah Ali baca?
What-Q Ali read?
'What did Ali read?'

(19) *Apakah kau ingat Ali baca?
What-Q you think Ali read?
'What do you think that Ali read?'

One way in which objects in simple and embedded sentences may be questioned is as follows:-

(20) Apakah (yang) dibaca oleh Ali?
What-Q COMP Pass-read by Ali
'What was it which was read by Ali?'

(21) Siapakah (yang) kau kira dicium oleh Siti?
Who-Q COMP you think Pass-kiss by Siti?
'Who do you think was kissed by Siti?'

Martohardjono and Gair (1992) argue that neither of these sentences involve movement of the wh-element.[4] Their argument that wh-movement at S-structure is not involved in the above questions is based on the following observations. Firstly, they note that object extraction is not possible: when the object of a sentence is questioned, as in (20) and (21), the passive clitic 'di-' must attach to the verbs so that in the passive sentence, the wh-words are subjects. They argue that even the apparent movement of the wh-element from the embedded clauses to the matrix clause in (21) is in fact a function of clefting in which the wh-word is base-generated in situ. Their argument is based on evidence that the sentences in (20) and (21) are, in fact, focused or cleft sentences. Such sentences consist of relative clause-like structures and a

[4] Martohardjono and Gair's analysis is based on Indonesian, which shares a common origin with Malay. The examples they use to support their argument are syntactically and lexically equally applicable to Malay.

copular clause which appear to be in a subject-predicate relationship.

The evidence that Martohardjono and Gair use to support the argument that the questions in (20) and (21) are focus sentences is the optional appearance of the relative complementizer 'yang' which does not change the meaning of the sentence and strongly suggests that these questions contain relative clauses.[5] Further evidence that the relative clause is present in such sentences is the restriction against object relativization in Indonesian.[6] This would account for the obligatory passivization in (20) and (21), even in the absence of the complementizer.[7] The absence of the copula which is usually found in cleft sentences is simply explained by the fact that the language lacks an overt copula. Thus, it appears that wh-in-situ is obligatory and that although object words in matrix and embedded sentences can appear in sentence initial position, they can do so only in cleft sentences in which the wh-word is base-generated in situ.

On the basis of these linguistic facts, Martohardjono and Gair argue that unlike English, syntactic movement of the wh-element does not take place; consequently, they argue that the empty category in such questions is not wh-trace, as in English, but pro. The absence of object extraction is accounted for by Huang's (1984) proposal of a universal constraint against the presence of object pro in natural languages.

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5 The complementizer 'yang' appears in wh-questions, topicalization and cleft sentences. Hung (1987) points out that 'yang' only occurs if some element is present in the specifier position of CP: this element may be a Wh-word, an empty operator or a topicalized DP.

6 Martohardjono (1993) argues that relative clauses too do not involve movement: the complementizer is base-generated in COMP position.

7 Below are Martohardjono and Gair's (1992) examples of grammatical relativization of the subject in (a) and ungrammatical relativization of the object in (b):

(a) anak yang e_i duduk di bangku
child COMP e sit LOC-bench
'The child who is sitting on the bench'

(b) *kuih$_i$ yang anak makan e_i
cake COMP child eat e
'The cake that the child ate.'

Huang's proposal of the universal constraint against the presence of object pro in natural languages follows from his suppositions that genuine pronominals are subject to Principle B of Binding Theory (see Chapter 1, Section 1.8) and the Generalized Control Rule. The latter is formalized in (22) as:-

(22) **Generalized Control Rule**
Coindex an empty pronominal with the closest nominal element where a nominal element can either be an NP or an AGR and closeness is defined in terms of c-command.

According to this principle, in (18), the empty category pro would be coindexed with 'Ali', the subject of the matrix clause and in (19), with the subject of the embedded clause. In both cases, this coindexation would be incorrect. Coindexation of pro with 'Ali' in either of these sentences would also violate Principle B of Binding Theory which requires pro to be free in its governing category. Thus, the sentences in (18) and (19) are correctly ruled out according to both principles.[8] Martohardjono (1993) points out that the postulation of pro rather than trace as empty category in these constructions obviates the need for language-specific statements.[9]

2.3 Consequences of the Non-Movement Analysis of Wh-Questions

We have already seen that one consequence of the non-movement analysis is that questioning the object involves passivization: this avoids violation of the universal constraint against object pro proposed by Huang (1984). Preposition-stranding and pied-piping which involves DP Objects would also violate the universal constraint against object pro and the language specific constraint resulting from the absence of the specifier position in DP. Below, we consider other consequences of the non-movement analysis.

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[8] As in the case of wh-questions, in a non-movement analysis of relative clauses, the empty category is not trace but pro; the absence of object extraction in these constructions is also accounted for by Huang's (1984) proposal that there is a universal constraint against object pro.

[9] In movement analyses of Malay (Huang, 1987; Guilfoyle, Hung and Travis, 1992), the constraint against object extraction is expressed in the language specific stipulation that the wh-element must pass through Spec, IP before moving into Spec, CP. In other words, movement is not possible over a filled Spec, IP.

2.3.1 Extraction from Embedded Clauses

Questions which contain relative clauses, adjuncts, wh-islands and complex noun phrases are grammatical in Malay since they do not involve movement of the wh-word: the wh-word is base-generated in situ. This is illustrated in questions (23) to (30) below:-

(23) Subject Extraction in Relative Clauses
Siti makan nasi goreng yang di-masak oleh siapa
Siti eat rice fried COMP PASS-cook by who
*'Who did Siti eat the fried rice that t cooked?'

(24) Object Extraction in Relative Clauses
Siti makan apa yang di-masak oleh Salmah?
Siti eat what COMP PASS-cook by Salmah
*'What did Siti eat that Salmah cooked t?'

(25) Subject Extraction in Adjuncts
Surat ini datangnya sesudah siapa pergi ke sekolah
Letter this arrive-POSS after who went to school
*'Who did this letter arrive after t went to school?'

(26) Object Extraction in Adjuncts
Surat ini datangnya sesudah Siti membeli apa
Letter this arrive-POSS after Siti ACT-bought what
*'What did this letter arrive after Siti bought t?'

(27) Subject Extraction in Wh-Island[10]
*Siti ingin tahu di mana siapa menyembunyikan bola itu
Siti wish know where who ACT-hid ball the
*'Who did Siti wish to know where t hid the ball?'

(28) Object Extraction in Wh-Island
*Siti ingin tahu di mana Adik menyembunyikan apa
Siti want know where Adik ACT-hide what?
*'What does Siti know where Adik hid t?'

(29) Subject Extraction in Complex Noun Phrase
Siti dapat khabar bahawa siapa membeli kereta itu
Siti receive news that who ACT-bought car the
*'Who did Siti receive the news t bought the car?'

[10] There appear to be language-specific constraints against subject and object extraction from wh-islands; descriptive facts suggest the generalisation that Malay does not permit two wh-elements within a single wh-question.

(30) Object Extraction in Complex Noun Phrase
Siti dapat khabar bahawa Ali membeli api
Siti receive news that Ali ACT-bought what
*'What did Siti receive the news that Ali bought t?'

Thus, we can see that Subjacency and ECP are not violated when subjects in relative clauses, adjuncts, wh-islands and complex noun phrases are questioned since movement of the wh-element does not take place. Subjacency is also not violated when objects in the same clauses are questioned for the same reason.

2.3.2 Questioning of elements within Subject Position

Unlike English, elements within CP Subjects, as in (31) or DP Subjects, as in (32) may be questioned since the Condition on Extraction Domains (Huang, 1984) does not apply in the absence of movement of the wh-element.

(31) Apa yang dilihat oleh Mary dipercayai oleh ramai orang
What COMP PASS-see by Mary PASS-believe by many people
*'What that Mary saw t was believed by many people?'

(32) Cerita apa mengejutkan Ali?
Story what shocked Ali
*'What story about t shocked Ali?'

2.3.3 'That-trace effects'

Unlike English, the wh-element in subject position may be questioned in the presence of the complementizer 'bahawa' (that).

(33) Ibu mengatakan bahawa siapa akan datang malam ini
Mother ACT-say that who will come night this
*'Who does mother say that t will come tonight?'

When clefted this sentence decreases in acceptability.

(34) *Siapa yang ibu mengatakan bahawa pro akan datang malam ini
Who COMP mother ACT-say that pro will come night this
'Who is it that mother says that will come tonight?'

However, Martohardjono (1993) ascribes the unacceptability of the clefted form to the violation of the GCR to which the empty category of pro is subject rather than violation of the ECP to which trace is subject. According to the GCR, the empty category pro would be coindexed to the nearest nominal element, which in this case would be 'ibu', which would give the wrong interpretation to this sentence.

To summarise: In this section we have presented a non-movement analysis of wh-question formation in Malay. We have seen that one of the advantages of the non-movement analysis is that it removes the need for a language-specific stipulation of the constraint against questioning the object in Malay; instead, the universal constraint against object pro is invoked. It also accounts for the absence of Subjacency and ECP effects in Malay in questioning elements in subject position in relative clauses, adjuncts, wh-islands, complex noun phrases and subject position. It also accounts for the absence of Subjacency effects in Malay in questioning elements in object position in the same clauses. It also accounts for the absence of CED effects in Malay; elements within CP and DP subjects may be questioned. Within this non-movement analysis, the ungrammaticality of subject extraction from an embedded clause in the presence of a complementizer is accounted for by violation of the GCR, rather than the ECP.

3 Discourse Orientation of Malay

In this section, we discuss the discourse orientation of Malay, with reference to the presence of empty categories and its 'focus-fronting' nature.

3.1 Presence of Two Empty Categories

Martohardjono (1993) argues that unlike English, Indonesian possesses both topic-comment structures and subject predicate structures. Topic-comment structures consist of the topic followed by subject predicate constructions. The examples in this section, taken from Martohardjono, are syntactically and lexically equally applicable to Malay.

(35) Kalau bunga mawar, saya lebih senang O yang ec putih
If flower rose, I more like O COMP ec white
'As for roses, I prefer white ones.'

(36) Nasi goreng saya kurang suka ec
rice fried I less like ec
'As for fried rice, I like it less.'

As (35) and (36) illustrate, in topic-comment constructions, null objects may be present. Additionally, discourse topics which are in A-bar position may be linked to both null subjects and objects as the examples in 37 (a) and (b), respectively, illustrate:-

(37) A: Amri ada di mana
Amri exist where
'Where is Amri?'

(a) B: ec baru saja pergi ke pejabat
now only go to office
'He has just gone to the office.'

or

(b) Baru saja kami lihat ec di pasar
Just now we see ec at market
'We just saw him at the market.'

However, elements in A-position can only be coreferential with empty categories in subject position. Hence, (38) which has an empty category in subject position is grammatical whereas (39) which has an empty category in object position is not grammatical.

(38) Siti mengatakan bahawa ec sudah menemu pengacaranya
Siti ACT-say that ec already met Lawyer-POSS
'Siti said that she has already met with her lawyer.'

(39) *Siti mengatakan bahawa pengacaranya sudah melihat ec
Siti ACT-say that lawyer-POSS already meet ec
'Siti said that her lawyer had already met her.'

(40) Siti mengatakan bahawa pengacaranya sudah melihatnya
Siti ACT-say that lawyer already ACT-meet-3s
'Siti said that her lawyer had already met her.'

(40), in which the element in A-position is coreferential with a phonologically present object in the embedded clause, is well-formed.

On the basis of the above evidence, Martohardjono suggests that Indonesian has two types of empty categories- variables which are bound to elements in the discourse in non-argument positions, as in (35), (36) and (37), and pronominals which are bound to elements in argument positions, as in (38). She argues that the former are variables which are subject to the ECP and Subjacency. The observation that objects may be topicalized supports the argument that topicalized elements are generated by wh-movement rather than base-generated. This presents a contrast to the absence of pronominals in object position which are coreferential with an element in A-position. Martohardjono adopts Huang's (1984) proposal that the empty category in these constructions are subject to Principle B of Binding Theory as well as the Generalized Control Rule which rule out the presence of pro in object position. Since the examples in this section also apply to Malay, we may assume the presence of two types of empty categories, variables which are generated by movement and base-generated pro, in Malay too.[11]

3.2 Focus-Fronting

Malay belongs to the family of Austronesian languages, in which focus organisation is present (Dahl, 1978; Ferrel and Stanley, 1979; Naylor, 1975, 1985; Weeda, 1991). Ferrel and Stanley's (1979:19) view that focus forms the 'basic syntactic organisational matrix' for these languages is representative of the studies cited. Since focus has been used by different linguists to refer to different concepts, it may be instructive to begin by indicating what it is not, in the context of studies in Austronesian languages. Naylor (1975) quotes Pike (1963: 219):-

'Focus is not emphasis. Focus reports the observer's attention to one of several

[11] Further evidence which suggests the presence of more than one type of empty category in Malay is found in Salleh (1987) who convincingly illustrates that topicalized sentences and wh-phrases occupy different landing sites.

> relations- without the essential emotional overtones- between a predicate and some other part of a clause; the focus-complement substantive topic is viewed only in reference to that relationship, not as in focus of itself. In emphasis, on the contrary, some one substantive is singled out from a direct overlay of emotional connotation... this formal independence of emphasis allows it to function as a variable which is formally separate from the focus complement.'

Succinctly, then, focus differs from emphasis in referring to the relationship between two parts of a clause rather than highlighting or foregrounding a single part of the clause.

Focus should also not be confused with topicalization of one of the overt noun phrases of the sentence. Instead, it is more narrowly defined as a restricted number of relationships which are indicated on the verb by syntactic marking or inflection. The choice of the NP which is focused depends on verb morphology or what has been called by Shibatani (1988) and Wolf (1988) as the 'voice' of the verb. Thus, although some Austronesian verbs, including Malay, have no inflection for person, number or gender, the choice of the verbal affix or its absence has important consequences for determining which of the semantic role categories are 'in focus' for the sentence (Chung, 1976a, 1976b, 1978; Hung, 1987; Hung, 1988; Guilfoyle, Hung and Travis, 1992).

Traditionally, the particular morphology on the verb has been called either Topic or Focus morphology while the NP bearing the semantic role in focus has been called the Topic or Focus NP. The terms generally used by Austronesian linguists, for example, Schachter (1976), to describe the semantic role categories are 'Actor' and 'Goal' which are used in lieu of 'Agent' and 'Patient'. While it may be generally assumed that Actor generally refers to Agent, Goal includes Patient as well as the semantic roles of Location, Theme and Recipient. When the Topic or Focus NP is an Agent, the construction is known as an Actor-Topic construction. On the other hand, when the Topic NP is not an Actor, the construction is known as a Goal-Topic construction. (41) illustrates an Actor Topic construction while (42) illustrates a Goal-Topic construction. The NP in focus or the Topic is in bold, while the Focus morphology is indicated by AT or GT preceding the glosses to indicate that the verbs are morphologically marked respectively, as actor-topic or goal topic.

(41) **Ali** memberi saya buku itu.
Ali AT-gave me book the
'Ali gave me the book.'

(42) **Buku itu** Ali berikan kepada saya.
Book the Ali GT-give to me
`Ali gave me the book.'

In wh-question formation too, the verb which bears Topic morphology must agree with the theta-role of the wh-element. The examples below are taken from Guilfoyle, Hung and Travis (1992). In (43), the wh-element is an Agent and the verb carries Agent-Topic morphology. Thus, the wh-question is well-formed. In (44), the verb carries Theme-Topic (Goal Topic) morphology which does not agree with the wh-element. Thus, this sentence is not well-formed.

(43) **Siapa** yang membaca buku itu?
who COMP AT-read book the
'Who read the book?'

(44) ***Siapa** yang buku itu dibaca?
who COMP book the TT-read
'Who read the book?'

The possible influence of focus-fronting in the L1 at the discoursal level among L2 learners was discussed in Chapter 2, Section 4.1. In Chapter 10, we will discuss the possible influence of 'focus-fronting' in the L1 in the production of wh-questions in the L2.

4 Summary of Contrastive Analysis of Wh-Question Formation in Malay and English

We have argued that unlike English, Malay does not generate wh-questions by movement at S-structure. Accordingly, the empty category in wh-question formation in Malay is pro, while in English it is trace. Consequences of this fundamental difference are:-

(1) The absence of object extraction in simple sentences in Malay but not in English.
(2) The absence of object extraction from embedded clauses in Malay but not English.

(3) The absence of pied-piping and preposition stranding in Malay, unlike English.
(4) The absence of Subjacency and ECP effects in wh-questions in Malay but not in English: elements in subject and object position in relative clauses, adjuncts, wh- islands and complex noun phrases may be questioned in Malay but not in English
(5) The absence of Condition on Extraction Domain Effects: Elements in CP or DP subject position may be questioned in Malay but not in English.
(6) Apparent 'that-trace effects' are due to the violation of GCR, rather than the ECP.

Additionally, we noted the existence of two empty categories in Malay, variables which are bound to elements in the discourse in non-argument positions and pronominals which are bound to elements in argument positions. Malay, like other Austronesian languages, is also unlike English in being focus-fronted in nature.

The differences outlined above between wh-question formation in Malay and English will be drawn upon for the rationale of the empirical study and the formulation of experimental hypotheses in Chapter 5.

Chapter 4

The Language Background of the Empirical Study

Introduction

This chapter describes the language background of Malaysia with particular reference to the changing role, status and functions of Bahasa Malaysia and English. Broadly, it describes the effect of the political and historical changes of the country on the language and education policies which have been adopted. This serves an important purpose in the understanding of our experimental study in that it accounts for the presence of a group of highly proficient speakers of English in a country where English is a second or foreign language for the majority of the population. We also describe the changing emphasis accorded to English within the educational system which is reflected in the quality and quantity of formal instruction and assessment procedures. The description of the educational system provides us with an understanding of the language background of the subjects in the empirical study.

The historical changes in the language policies of the country also account for the differing levels of proficiency in English between the older and younger subjects of the study: generally, tertiary educated Malays of the older generation have a much higher proficiency in English than the younger generation. The chapter also describes the changing status and functions of English in domains other than the educational one. This influences the linguistic exposure to English that learners are likely to receive in terms of naturalistic data.

Malaysia has a population of over 16 million; the ethnic composition of Peninsular Malaysia is 53% Malay, 35% Chinese and 11% Indian. Since the members of each of these main ethnic groups possess their own language or groups of languages, Malaysia is both ethnically and linguistically varied. The indigenous population of Malaysia can be divided into two main groups according to their linguistic backgrounds: people whose languages belong to the Austronesian family of languages and those whose languages are of the Austroasiatic stock. The former are mainly Malays who speak Malay or Bahasa Malaysia which is the only Austronesian language spoken in Peninsular Malaysia. The latter are found mainly in the central highland areas of Peninsular Malaysia and are traditionally known as the `orang asli' or `aborigines'. The language spoken by these people has come to be called `Aslian'

which is derived from the Malay word `asli' (literal meaning: `original').

Among the non-indigenous population, the main languages spoken by the Chinese who form the largest racial group, are Hokkien, Hakka, Cantonese, Teochew and Hainanese. The majority of the Indian community are Tamil-speaking but Malayalam, Punjabi and Telegu are also spoken. In addition to these languages, a form of pidgin Malay resulting from language contact between the Malays and the non-Malays, mainly in the market place, has arisen. This is known as `Bahasa Pasar' or Bazaar Malay.

Against this background of cultural and linguistic plurality, the discussion will focus on the relative importance of the two main languages which are spoken in Malaysia, Bahasa Malaysia, the national and official language and English, the heritage of the colonial past. The discussion will be divided into three distinct periods: the colonial period, the post colonial period until 1970 and post 1970.

1 Evolution of Current Language Policies

1.1 The Colonial Period: Subordination of Malay

British control of the Malay peninsula was established by the end of the 19th century. In the early part of the twentieth century, the British encouraged mass immigration from China and India to work the tin mines and rubber estates. Thus, the largely homogenous indigenous Malay population was changed to a multi-racial, multi-lingual society. Malay was subordinated to English in administration and education and English became the lingua franca among the educated.[1] Two parallel systems of education were established- a vernacular system for each of the three main racial groups (Malay, Chinese and Tamil) and the English system.

The earliest English medium schools were situated mainly in the urban areas, were mission schools and charged fees. Few Malays were attracted to these schools due to its geographical location, its missionary character and the fact that fees had to be paid unlike the Malay vernacular schools (Tan, 1991). Until after World War Two, the

[1] However, the overall inter group lingua franca was `Bazaar Malay' which precluded the need for the development of an English-based pidgin (Talbot, 1989).

majority of the pupils in these English medium schools were urban Chinese and to a lesser extent, Indians. The Malays who did attend these schools tended to be rich and of aristocratic background. Thus, the fact that more non-Malays are proficient in English than Malays stems from historical bases in the educational system (Tan, 1991).

The vernacular schools of the Indians and the Malays differed from the Chinese. The former were limited to providing only primary education and situated mainly in rural areas while the latter provided education for up to twelve years and were situated in urban areas. The Malay vernacular system tended to have a strong Islamic orientation[2] while the Chinese and Indian vernacular systems were oriented to the systems of education in China and India respectively, with teachers brought in from these countries.

As the language of the colonial administrators, English was the language which was associated with prestige, power and elitism. English medium education was valued for the economic and social advances that knowledge of English allowed. Unlike Malay, English education was not limited to primary education but available up to tertiary education. Employment opportunities for those who were educated in English included positions as junior administrative officers in the colonial regime as well as occupation in banks, the communication systems, large departmental stores and harbours. This led to an increase in the proportion of the populace who sought English medium instruction.

1.2 Development of Education between 1957 and 1970: Revival of Malay

With independence in 1957, Malay was declared the national language. The Education Ordinance of 1957 legislated that Malay was to be the main medium of instruction[3]:

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[2] Before colonialism, education among the Malays was almost solely religious, centring on the ability to read and understand the Quoran; the ability to read and write in Malay was not taught. Under British administration, the foundation was laid for a movement from purely religious towards secular education in Malay.

[3] It is worth pointing out that even when English was the medium of instruction, the majority obtained their education from the vernacular schools. In fact, only 14.2% of the school population were in English medium schools but since this was made up largely of the urban and the affluent, the change to Malay as a medium of instruction was significant.

the changeover from English was to be gradual, with completion expected only in 1983. By 1971, all first year English-medium classes were converted to Malay-medium. The vernacular schools continued to be maintained with the proviso that these schools adhere to a common syllabus and time-table and taught English and Malay as compulsory subjects. A ten-year interim period was given to non-Malays to learn the language. English still continued to be used in Parliament, State Legislative Assemblies, Courts and Legislation. Till up to 1967, English was one of the two official languages in Malaysia, but the National Language Act of the same year revoked this, making Bahasa Malaysia as it now came to be known, the sole official language.[4]

1.3 Educational Development post 1970: Awareness of the Importance of English

By 1980, the medium of instruction in the entire school system was in Malay. English was relegated to the position of being one of the subjects which were taught in the school curriculum. In 1983, all the five Universities began using Malay as the medium of instruction for all first year courses. The East Malaysian states of Sabah and Sarawak which only joined Peninsular Malaysia in 1963 also adopted Bahasa Malaysia as the medium of instruction (Sabah in 1976, and Sarawak in 1980).[5]

The Third Malaysian Plan (1976-1980) made explicit the status of English in relation to other languages in the country when it declared that English should be taught as `a strong second language', second in importance only to Bahasa Malaysia. This declaration stemmed from the realisation of the importance of English as a language of specialised information in keeping Malaysia abreast with scientific and technological developments in the world. The importance of English as a language of wider communication which would allow Malaysians to take an active part in international trade and commerce was also recognised. Thus, the pragmatic importance of English was balanced against the importance of Malay as a language of nationalism and national identity.

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[4] Omar (1979) defines official language as the `language used in official communication, oral or written, in government administration and in schools and other educational institutions.'

[5] In 1983, the National Language Bill required that Sabah and Sarawak use Bahasa Malaysia in Parliament and the Senate.

2 Structure of Education

2.1 The School System

The school system is controlled by a central body, the Ministry of Education which has branches in each state. The education system in Malaysia consists of four levels - primary, secondary, post-secondary and tertiary. Primary education consists of six years and the medium of instruction may either be Bahasa Malaysia or in the vernacular (Tamil or Chinese). Education at the primary level is free, not compulsory and with automatic promotion at the end of each school year. At the end of the sixth year, a national examination is conducted for diagnostic purposes. This is followed by automatic promotion of the Malay medium educated to the lower secondary level for three years. Those educated in the Chinese or Tamil medium schools have to spend a transitional year in 'Remove' class before joining the other students at the lower secondary level.

After three years of lower secondary education, students have to take a national examination, the Sijil Rendah Peperiksaan (SRP) or Lower Certificate of Education. They are then streamed to academic, vocational or technical classes to complete their secondary school education. After two years of upper secondary level education, students sit for another national examination, the SPM examination, which is equivalent to the 'O' levels. Malay students who obtain good grades in this examination are allowed to proceed immediately to matriculation classes in the local universities after which they are channelled into medicine, engineering or science courses. Others proceed to Lower Sixth, to begin two years of pre-university education. At the end of Upper Sixth, these students take the STPM examination which is equivalent to the 'A' level examination, to qualify for tertiary education.

2.2 English Language Education

The objectives of teaching English as a second language as outlined in the Cabinet Committee Report of 1982 are two-fold:-

(a) To enable pupils to use the English language in certain jobs and activities;
(b) To enable a small group to increase their skills in the language so that they can use the language for specific purposes in tertiary education.

The first aim is targeted at a wide spectrum of the school population to enable students to attain a basic level of proficiency in English which will allow them to

communicate in the language for practical purposes in the workplace. The second aim is geared towards a more select proportion of the school population with the purpose of equipping them with the means to access specialised information in their academic fields. This marks a shift from the colonial system of education in which a small percentage of the population attained near-native command of the language towards a system of education in which the majority have a limited knowledge of English for communicative purposes and a select group use English for specific academic purposes. Below, we will consider how English is taught in primary and secondary schools, pre-university classes and tertiary education.

2.3 Primary and Secondary Schools

English is taught as a second language from Standard One (the first level of primary education) in all state schools which use Bahasa Malaysia as the medium of instruction. It is taught as a third language in Chinese or Tamil medium schools in the third year. English is a compulsory subject in all national exams at the primary and secondary level but it is not essential to pass it. English is assessed in the national examinations which are held at the end of the last year of primary school and after three years and five years of Secondary School education. In order to obtain Grade One in the last examination it used to be necessary to obtain a credit in either Bahasa Malaysia or English but now only a credit in the former is essential. This has obvious implications for the teaching and learning of the two languages.

2.4 Pre-University Classes

At this level, English is not taught. Since pre-university courses are run over two years, there is a two year gap between the teaching of English in secondary schools and universities. Instead, English Literature may be taken by students who wish to pursue courses in English literature at the University. With Bahasa Malaysia as the medium of instruction, it is hardly surprising that the number of students who take English Literature at this level is restricted to a small number of students in the urban areas.

2.5 Tertiary Education

There are now seven universities in Malaysia- University of Science, University of Malaya, the National University, the Northern University, the University of Technology, the International Islamic University and the University of Agriculture. The medium of instruction in all these universities is Bahasa Malaysia except in faculties in which there is a large proportion of expatriate staff. While a pass in English is not an entrance requirement at any of the Universities, English courses are conducted in all seven universities. As in the school system, English is a compulsory subject but in some universities, it is not essential to pass it. The main aim of the English courses offered at tertiary level is to enable students to read English for academic purposes as the number of academic textbooks in Malay or translations from English is still small. In addition, some universities orientate their English courses towards the perceived needs of the workplace, with an emphasis on oral English skills.

A relatively new phenomenon is the establishment of twinning programmes between private institutions and overseas universities. In such programmes, students are able to study for part of their overseas degree in Malaysia with the assistance of the parent University. Courses conducted in these private institutions are in English. Some of these institutions require a certain level of proficiency in English as a prerequisite for entry. In some of these colleges, special English classes are held to prepare students for examinations conducted by academic and professional bodies or the English requirements of overseas universities. The continuance of such arrangements will ensure that the teaching and learning of English continues to be emphasised at tertiary level.

2.6 Training of English Language Teachers

The training of English language teachers is the responsibility of the teacher training division of the Ministry of Education. About 1300-1500 trainees are recruited each year for the TESL course, the majority of whom will go to primary schools. Graduate teachers are trained at three local universities: a one year Diploma of Education course is conducted at the University of Malaya and a degree in TESL is carried out at the University of Agriculture, the University of Science and the University of Malaya.

2.7 Encouragement of Effective Teaching and Learning of English

There is now a general concern over declining standards in proficiency in English. In 1980, Platt and Weber perceived that the standard of English of the Malay-medium educated was hovering `on the threshold between a foreign language and a second language.' With the fading of the association of English with colonial domination and the successful implementation of Bahasa Malaysia as the medium of instruction in the educational system, greater efforts are now being made to promote the teaching and learning of English. [6]

This has included the introduction of language enrichment programmes such as extensive reading schemes and the Listening Comprehension Programme in selected schools. English language teachers are also being sent abroad to the United Kingdom for courses in TESL. For example, there are now about forty Malaysian teachers of English each in Moray House College of Education in Edinburgh and Strathclyde University in Glasgow. The Schools Division also produces the Journal of Language Teaching and Learning which is distributed to all schools to update teachers with new developments in methodology.

3 Functions of English in Other Domains

Thus far, our discussion of English has focused on its role in the domain of Education. We will now briefly consider its role in other domains such as the Family and Friendship, Work and Transactions, Government and Law and the Media.

Platt and Weber (1980:155) found that the use of English within the domain of the

[6] The development of the role and status of English in Malaysia conforms to the life cycle of non-native Englishes, as noted by Moag (1982); English began as a foreign language, became a second language and appears to be now reverting to a foreign language. Moag notes that there are four or five phases which constitute the life cycle of non-native Englishes. In the first phase, transportation, locals use English to communicate with the native speaker. In the second, indigenisation, they use English to communicate among themselves. In the third phase, expansion in use and function, the use of English is expanded into the education, media and government services and used by more people than the elite group in the earlier phases. English becomes a second language and its neutral role in a multi-lingual setting is easily accepted. In the fourth phase, institutionalism, its role is institutionalised in the economic and social development of the country. Finally, in the fifth phase, which conforms to the current status and role of English in Malaysia, its use and function is restricted, and the local language (Bahasa Malaysia) displaces it for political, nationalistic and cultural reasons.

family is usually restricted to `the urban elites of various ethnic backgrounds'. In contrast, the rural population, particularly the Malays and the Indians retain the use of the mother tongue. Platt and Weber also found that educational background was a significant factor in determining language choice: those who were educated in English medium primary schools were far more likely to use English in the home than those who were educated in Chinese medium primary schools. With the growing importance of Bahasa Malaysia, it is anticipated that there will be more use of this language even among those who were educated in English. One change which is likely to take place is that instead of pre-school children learning English from older siblings before school-going age as often used to be the case when English was the medium of instruction, now it is possible that older siblings may learn Bahasa Malaysia from their younger siblings. Among friends, it is likely that the older generation who were educated in English will continue to use English with friends from similar educational backgrounds. However, it is anticipated that Bahasa Malaysia will increasingly predominate inter-ethnic communication because of the increasing number of young people being educated in the language.

In the work domain, knowledge of Bahasa Malaysia is now required for most advertised occupations. In the transactions domain, it is anticipated that Bahasa Malaysia will predominate in shopping centres with English only being used with tourists and expatriates. It is likely that Bazaar Malay will continue to be used in informal market situations, particularly in inter ethnic communication among the older generation.

In the domain of government and law, the changeover to Bahasa Malaysia in correspondence and communications is complete. With respect to the media, the main language used on radio is Bahasa Malaysia. Of the four networks, the national station broadcasts in Bahasa Malaysia while the other networks use one of the other three languages. On television, announcements and commercial advertisements between programmes are mainly made in Bahasa Malaysia. However, a large number of American programmes continue to be screened. In addition, films in all four languages are shown at least twice a week and newspapers are produced in all four languages.

4 Summary

This chapter has aimed to trace the evolution of the current language situation in Malaysia from the colonial period. The history of the country from the onset of colonialism is closely reflected in the relative status, role and functions of Bahasa Malaysia and English. During colonialism, Malay was subordinated to English, a system which was drastically reversed with independence and growing nationalism. We have seen that in more recent times, there has been a growing awareness of the importance of English as a language of specialised information and a language of wider communication. Thus, we have considered how the current language situation in Malaysia is partly the legacy of colonial history and partly the result of post-independent policies.

Within the educational system, we have noted the status of English as medium of instruction in state schools and the only language in which tertiary education was conducted during the colonial period. We have also seen how that privileged status has been gradually diminished in post-independence educational policies, which relegated English to the role of second language. Bahasa Malaysia has gradually become the medium of instruction, necessary for educational advancement in the country. The teaching of English as a second language is largely to enable a wide spectrum of the population to carry out certain jobs and activities in English as well to allow those pursuing tertiary education access to specialised knowledge. The changing emphases accorded to the role and status of English in the educational system at the national level is reflected in the quantity and quality of formal instruction provided in English in the school system.

Finally, we have considered the role of the two languages in domains outside of education such as the family and friendship, the workplace and commercial transactions, the government and law, and the media. This chapter has sketched the language background of the empirical study. In the next chapter, we will describe the rationale for the study, its general hypotheses and specific predictions.

Chapter 5

Rationale, General Hypotheses and Specific Predictions of the Empirical Study

Introduction

In this chapter, we present the rationale for the empirical part of the study. This is theoretically motivated by the linguistic and psychological concepts which have been discussed in Chapters 1, 2 and 3. In Chapter 4, we described the language background for the empirical study. The study is part experimental and part exploratory. The experimental part of the study consists of the testing of specific hypotheses while the exploratory part of the study describes developmental patterns in production data in order to obtain insights into the second language acquisition of wh-movement in English by Malay learners.

1 Rationale for the study

In Chapter One, we have seen that, within the generative approach, it is widely accepted that child language acquisition is constrained by the innate language acquisition device, UG. In contrast, we have noted in Chapter Two, that the continued accessibility of UG in second language acquisition (SLA) is a matter of continuing debate. Some SLA researchers claim that it is fully accessible while others claim that it is completely inaccessible, or only accessible through its instantiation in the L1. Between these extreme points of view, is the standpoint that UG is partly accessible, apart from its instantiation in the L1. However, at present, the absence of a principled explanation for the extent to which UG continues to be accessible is lacking. Indeed, much present research in SLA is devoted to the investigation of this question.

The significance of the continued accessibility of UG to the L2 learner lies in its contribution to our understanding of the nature of the interlanguage: it determines whether interlanguages are UG-constrained, 'natural languages' or 'wild' grammars. It also has a bearing on the extent to which L2 languages are 'acquired' or 'learnt': the extent of the accessibility of UG is directly related to the extent to which L2 learners unconsciously acquire a language as opposed to consciously apply problem-solving or

cognitive strategies to learn it. This has implications for the developmental route of second language learners and the transitional constructions which may be produced. It also has implications for the level of 'ultimate attainment' which is possible for the L2 learner: the accessibility of UG to the L2 learner is directly related to the question of whether native-like proficiency is possible, and if not, the extent to which the ultimate grammar approximates the target grammar.

The form of evidence which researchers have commonly used as evidence for continued accessibility to UG in L2 acquisition is the ability to reject UG violations. The underlying assumption is that if learners have knowledge of UG principles, they will be able to reject UG violations. Unfortunately, this does not rule out the possibility that learners may reject UG violations on grounds which are not related to knowledge of UG, for example due to difficulty in parsing within a limited time period. Also, it does not rule out the possibility that what may be violations in the target language may be acceptable within a UG-constrained interlanguage (cf. Martohardjono and Gair, 1992; White, 1992).

It has been suggested that the ability to discriminate between strong and weak UG violations and the ability to discriminate between sentences in which two UG principles are violated from sentences in which only one UG principle is violated is stronger evidence for the continued accessibility to UG than the ability to only reject UG violations (Martohardjono, 1991). The underlying assumption here is that if learners possess knowledge of UG principles, they will also possess knowledge of the extent to which UG is violated. Knowledge of the extent to which UG is violated constitutes stronger evidence of continued access to UG than just knowledge that UG is violated.

Within the functional parameterization hypothesis, recent investigation of the accessibility of UG focuses on whether functional categories are instantiated for the L2. In Chapter 2 Section 5, we saw that numerous conflicting positions have been argued for. In the process, much research has focused on what may be transferred from the L1 (White, 1985; 1991; Eubank, 1994). Determining transferability from the L1 allows us to establish a potential knowledge source apart from direct access to UG. Once we are able to rule out the L1 as a potential knowledge source, our argument that instantiation of functional categories for the L2 is achieved through continued access to UG is considerably strengthened.

The present study is motivated as a contribution towards resolving the issue of continued accessibility of UG to L2 learners with reference to the acquisition of a particular syntactic phenomenon by L2 learners from a particular L1 background. The particular syntactic phenomenon which has been chosen is the acquisition of wh-movement at S-structure. Wh-movement at S-structure is a parametric option which is permitted by UG in certain languages. Several studies (some of which have been discussed in Chapter 2) have investigated whether L2 learners have access to UG principles which are relevant to wh-movement, such as Subjacency and the ECP. However, few studies have explicitly researched learners' ability to reject UG violations in the context of the acquisition of wh-movement.[1] Without evidence that wh-movement has been acquired, the inability of subjects to reject UG principles which are relevant to wh-movement may quite reasonably be attributed to the irrelevance of these principles to the grammar. In order to convincingly argue that there is a decline in the continued accessibility of UG principles relevant to wh-movement to the L2 learner, it has to be demonstrated that wh-movement has been acquired by using other diagnostic criteria. This study investigates learners' reactions to UG violations as well as other developmental evidence of the status of wh-movement in the grammar. In so doing, we are heeding the reminder of several researchers to consider interlanguages as systems in their own right (Selinker, 1972; Birdsong, 1989; Schwartz and Hoekstra, 1994)

The L2 learners which have been chosen for this study are learners with Malay as the L1. This particular group of learners are particularly suited for the aims of this study since, as has been demonstrated in Chapter 3, Malay does not instantiate wh-movement at S-structure. Thus, the acquisition of wh-movement in conformity with UG principles by these learners may not be accounted for by transfer from the L1 in the instantiation of functional categories for the L2. Ruling out this knowledge source enables us to argue more strongly that UG continues to be accessible to the L2 learner than if the values of functional categories in the L1 and the L2 with respect to wh-movement were similar.

The rest of this chapter is structured as follows. Firstly, we present the arguments for the first of our general hypotheses, that is, that wh-movement is not present in the

[1] The notable exceptions are those of Martohardjono and Gair (1992) and White (1992).

interlanguage during the initial stages. We then present specific hypotheses of how beginning Malay learners may be expected to behave during this initial non-movement stage. Secondly, we argue that Malay learners acquire wh-movement in English through the continued accessibility of UG principles. We present specific predictions as to how we may expect such learners to behave. Thirdly, we argue that unlike native speakers, Malay learners are likely to find some forms of grammatical wh-extraction more acceptable than other forms of grammatical wh-extraction due to various types of L1 influences and learnability considerations. Like native speakers, they may also be influenced by processing constraints but these may interact with L1 influence. Thus, the relative acceptance of grammatical wh-extraction among beginning Malay learners may differ from that of native speakers. However, with continued exposure to the L2 and accessibility to UG, we predict that they are likely to overcome L1 influences and learnability considerations but like native speakers, will be influenced by processing constraints. Finally, we describe the basis for the exploratory part of our study. The main aim of the exploratory part of the study is concerned with providing a descriptive and explanatory account of the developmental patterns which are obtained from the acquisition of wh-movement by Malay learners of English.

2 Early Non-Movement Hypothesis among L2 Learners

In Chapter 1, we saw that UG permits optionality in the level at which wh-movement operates: in some languages, wh-movement at S-structure is obligatory whereas in other languages, it is not. If we make the assumption that interlanguages are natural languages (Adjemian, 1976) constrained by UG principles, then it follows that learners of L2 languages will be faced with optionality in the level at which wh-movement operates: they have the option of whether to generate wh-questions by movement at the level of S-structure. In Chapter 2, we argued that the developmental features in L1 and L2 acquisition studies are consistent with a universal early non-movement stage in the acquisition of wh-movement. Finally, a contrastive analysis of the generation of wh-questions in Malay and English in Chapter 3 revealed that in the former, wh-questions are generated in the absence of movement at S-structure, unlike the latter. Accordingly, if we consider the combined influence of (a) optionality permitted by UG, (b) a universal early non-movement stage in L1 and L2 acquisition and (c) the influence of transfer from the L1 in the generation of wh-questions in the absence of wh-movement at S-structure, we may strongly predict that in the initial stages, learners will not generate wh-questions in the L2 by movement.

2.1 Consequences of the Non-Movement Hypothesis: Specific Hypotheses

Several consequences may be expected to follow from the main hypothesis of an early non-movement stage:-

(a) If beginning learners produce wh-questions in the absence of movement at S-structure, then we may predict that in such questions, the empty category is not the wh-trace which has been left behind by the wh-element as in the target grammar. Accordingly, we may predict that in the initial stages, learners may not be able to reject Subjacency violations since the relationship between the wh-element and the empty category is not subject to the principle of Subjacency. More specifically, we may predict that learners at the initial stages of acquisition will fail to reject ungrammatical subject and object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases.

(b) Since Subjacency is not relevant to their grammars, we may predict that learners at the initial stages of non-movement will not possess knowledge of the extent to which sentences violate Subjacency. Accordingly, they will not be able to discriminate between strong and weak Subjacency violations. More specifically, we may predict that they will not reject extraction from relative clauses and adjuncts (strong Subjacency violations) more decisively than extraction from wh-islands and complex noun phrases (weak Subjacency violations).

(c) We may also predict that beginning learners will not be able to discriminate between two weak violations in favour of the weaker violation. More specifically, we may predict that learners will not give ungrammatical extraction from wh-islands a higher rating than ungrammatical extraction from complex noun phrases.

(d) We may also predict that beginning learners will also not be able to discriminate between sentences which violate only Subjacency in ungrammatical object extraction and sentences which violate two UG principles, Subjacency and the ECP in ungrammatical subject extraction. More specifically, we may predict that beginning learners will not reject subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases to a greater extent than object extraction from the same clauses.

(e) Since beginning learners who have not acquired wh-movement are not likely to

be governed by UG principles relevant to wh-movement, we may predict that they will be unable to discriminate between grammatical and ungrammatical wh-extraction. More specifically, we may predict that beginning learners will not favour:-

(i) Grammatical subject extraction from an embedded clause in the absence of a complementizer over ungrammatical extraction in its presence ('that trace effects')
(ii) Grammatical extraction from DP Objects over ungrammatical extraction from DP Subjects
(iii) Grammatical extraction from CP Objects over ungrammatical extraction from CP Subjects
(iv) Grammatical extraction from sentences containing relative clauses and adjuncts over ungrammatical extraction from within relative clauses and adjuncts
(v) Grammatical extraction from CP Objects over ungrammatical extraction from wh-islands and complex noun phrases

(f) Beginning learners who are not constrained by UG principles related to wh-movement may also produce UG violations. Specifically, we predict that they will produce:-

(i) ungrammatical subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(ii) ungrammatical object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(iii) ungrammatical extraction from CP and DP Subjects
(iv) 'that-trace effects'

(g) Beginning learners who have not acquired wh-movement may also be predicted to produce wh-questions with characteristics of non-movement. In Chapter 2, we argued that two main characteristics of early wh-questions, the absence of subject auxiliary inversion and the choice of the inappropriate auxiliary in apparent subject auxiliary inversion are consistent with an early non-movement stage. The former suggests adjunction of the wh-element while inappropriate choice of the 'be' form in COMP position may indicate the presence of null constant chains. These features strongly suggest that in early wh-questions, the empty category is not the wh-trace left behind by the moved wh-element as in the adult grammar.

(h) Further evidence of non-movement are the absence of any apparent gap, the presence of resumptive or residual pronouns, the production of wh-in-situ questions and the occurrence of 'null prep'.

(i) The inability to produce long-distance movement which requires movement through the escape hatch of embedded Spec, CP to sentence initial position may result in the production of short questions where successive cyclic movement is required.

3 Acquisition of Wh-Movement through the Continued Accessibility of UG Principles

In Chapter 2, we argued that L2 learners continue to have access to UG principles in the acquisition of wh-movement. We discussed several forms of evidence which suggest the continued accessibility of UG principles.

(a) One of the main forms of evidence is learners' ability to reject violations of UG principles related to wh-movement. We emphasised that this ability has to be considered within the context of the status of wh-movement in the grammar. Learners who have not acquired wh-movement are not likely to reject Subjacency violations since Subjacency is not relevant to the grammar. The studies we reviewed suggested that once learners have acquired long distance wh-movement, they are able to reject Subjacency violations.

(b) Additionally, assuming that learners continue to have access to UG principles, we argued that learners who have begun to acquire wh-movement would be able to reject Subjacency violations according to the strength with which Subjacency is violated. Accordingly, we predict that intermediate learners would be likely to:-

(i) Reject strong Subjacency violations more decisively than weak Subjacency violations.
(ii) Give higher ratings to the weaker of two weak Subjacency violations than the less weak of the violations.

However, we also predicted that advanced learners who have completed or nearly completed the process of acquiring wh-movement would not discriminate between Subjacency violations since the barriers against wh-movement are likely to be so firmly established that they will strongly reject all Subjacency violations.

(c) Intermediate learners who are acquiring wh-movement in conformity with UG

(c) Intermediate learners who are acquiring wh-movement in conformity with UG principles are also likely to discriminate between violations of one (Subjacency) and two UG principles (Subjacency and ECP) which are related to wh-movement. Advanced level learners and native speakers who have already firmly established the barriers against wh-movement are likely to reject violations of both UG principles, without discriminating between violations of one and two UG principles.

(d) Since 'that-trace effects' involve parametric variation and even idiolectal variation among native speakers, we may predict that advanced learners and native speakers are likely to accept them. However, since extraction from CP and DP Subjects involve invariant barriers, advanced learners and native speakers are likely to reject them. Thus, we may predict that advanced learners and native speakers are likely to give 'that-trace effects' significantly higher ratings than extraction from CP and DP Subjects.

(e) Continued accessibility to UG principles would also allow learners to discriminate between grammatical and ungrammatical wh-extraction. Accordingly we predict that they are likely to prefer:-

(i) Grammatical extraction from DP Objects over ungrammatical extraction from DP Subjects
(ii) Grammatical extraction from CP Objects over ungrammatical extraction from CP Subjects
(iii) Grammatical extraction in sentences containing relative clauses and adjuncts over ungrammatical extraction from within relative clauses and adjuncts
(iv) Grammatical extraction from CP Objects over ungrammatical extraction from wh-islands and complex noun phrases

However, we also predict that the ability to discriminate between grammatical and ungrammatical wh-extraction may be influenced by other factors. Since there was a high acceptance of 'that-trace effects' even among native speakers, we predict that advanced learners will also not be able to discriminate between 'that-trace effects' and their grammatical equivalents.

(f) Assuming the continued accessibility of UG principles, learners who have acquired wh-movement are likely to be constrained from producing UG violations. Specifically, we predict that advanced learners will <u>not</u> produce:-

(ii) ungrammatical object extraction from relative clauses, adjuncts, wh- islands and complex noun phrases
(iii) ungrammatical extraction from CP and DP Subjects

4 Relative Acceptability of Grammatical Sentences among Beginning Learners

In Chapter 2, we saw that unlike native speakers, beginning learners find some forms of grammatical wh-extraction more acceptable than other forms of grammatical wh-extraction due to factors such as L1 influence and learnability considerations. The factors which may influence Malay learners are briefly summarised below:-

(a) Influence of the L1

In Chapter 3, we saw that in Malay, a universal constraint against object pro prohibits object extraction. This constraint and the language-specific influence of the absence of the specifier position in DP also prohibits extraction from DP Objects.

(b) Processing Constraints

In Chapter 2, we saw that native speakers are influenced by processing constraints in favouring object extraction in embedded sentences over subject extraction in the same sentences. We suggested that processing constraints may interact with L1 influences in the acceptance of grammatical long distance movement in the case of beginning learners.

(c) Learnability principles

In Chapter 2, Section 3.4, we saw that the learnability principles of continuity and cumulative development predict that the acquisition of long-distance movement is gradual with each stage building on the previous stage in an implicational relationship (O' Grady, 1987; Quintero, 1992). Accordingly, learners' ability to accept and produce wh-extractions of a particular extraction-type decreases as the level of embedding increases.

4.1 Specific Predictions for the Relative Acceptability of Grammatical Sentences among Beginning Learners

(a) Extraction-Type in Simple Sentences

We may expect that the Malay learner in the initial stages of acquiring the L2 may be influenced by the L1 constraints against object extraction and extraction from DP objects. Since extraction from DP objects violates a universal constraint as well as a language specific constraint while object extraction only violates a universal constraint, we predict that during the initial stages of acquiring wh-movement, the Malay learner will conform to the following extraction hierarchy in simple sentences:

grammatical subject extraction < grammatical object extraction < grammatical extraction from DP Objects.

(b) Extraction-Type in Embedded Sentences

We saw that native speakers of English are influenced by processing constraints in favouring object extraction over subject extraction from embedded clauses. However, since Malay learners of English may be influenced by the L1 constraint against object extraction, we may predict that in the initial stages of acquisition, the influence of the L1 against object extraction and the processing constraint which favours object extraction over subject extraction may interact, so that the L2 learner does not discriminate between grammatical subject and object extraction from the embedded clauses. However, on the basis of the constraints against extraction from DP Objects, we predict that subject and object extraction in embedded sentences will be more acceptable than extraction from DP Objects in the same sentences.

(c) Level of Embedding

We predict that Malay learners, like other L2 learners, will less readily accept a particular extraction-type in simple sentences than in embedded sentences. Accordingly, we may formulate the specific predictions below. In the initial stages of acquisition, the Malay learner will more readily accept:-

(i) subject extraction in simple sentences than in embedded sentences
(ii) object extraction in simple sentences than in embedded sentences
(iii) extraction from DP Objects in simple sentences than in embedded sentences

5 Relative Acceptability of Grammatical Sentences among Advanced Learners

With continued exposure to the L2, and continued accessibility to UG principles related to wh-movement, we may predict that learners will receive positive evidence that wh-questions in English are generated by movement, such as the ready availability of object extraction. We may thus predict that they will begin to accept and then produce wh-questions which are generated by movement, perceiving the empty category as wh-trace, not pro. Thus, the universal constraint against object pro (Huang, 1984) will no longer apply. Positive evidence, such as possessives, will also inform them that DPs in English possess a specifier position: this would enable them to overcome the language specific constraint against extraction from DP Objects. With continued exposure to the L2, they would also overcome learnability considerations.

5.1 Specific predictions for the relative acceptance of grammatical sentences among advanced learners

Consequently, we formulated the following specific predictions. Advanced learners will:-

(a) overcome L1 constraints against object extraction and extraction from DP Objects in simple sentences. Accordingly, they are likely to equally accept subject and object extraction and extraction from DP Objects in simple sentences.

(b) overcome the influence of the L1 against object extraction, and only be influenced by the processing constraint against embedded subject extraction. Accordingly, we predict that during the later stages of acquisition, the Malay learner, like the native speaker, will more readily accept sentences with embedded object extraction than subject extraction.

(c) accept a particular extraction-type in simple and embedded sentences.

Accordingly, we predict that the L1 Malay advanced learner will not find:-

(i) subject extraction in simple sentences more acceptable than in embedded sentences
(ii) object extraction in simple sentences more acceptable than in embedded sentences

(iii) extraction from DP Objects in simple sentences more acceptable than in embedded sentences.

6 Developmental Patterns in the Acquisition of Wh-Movement in the L2

The second part of the study is exploratory in that it studies production data with the aim of describing and explaining common developmental patterns in the acquisition of wh-movement by a sample of L2 learners from a particular L1 background. This part of the study is descriptive insofar as it describes the common developmental patterns which are found in a cross-sectional investigation of Malay learners of English. The developmental patterns which emerge may be similar to those produced by learners from other L1 backgrounds in some respects and unique to learners of this particular L1 background in other respects. The study is explanatory in aiming to account for the acquisitional route which is taken by L2 learners; this may be externally manifested by the transitional constructions which learners produce at different levels of proficiency.

By examining the transitional constructions which are commonly produced by learners at each level, we may be able to divide the developmental route into distinct stages. Within each stage, there may be individual variation due to the strategies adopted by individual learners in coping with the demands of the experimental tasks. Idiosyncratic interlanguage constructions may offer insights into how individual learners progress towards the target language given the constraints of the present state of their grammar. However, it is arguably the common transitional constructions which are most valuable in informing us of the learners' 'built-in syllabus' (cf Corder, 1981).

With regard to the manner in which the acquisition of wh-movement proceeds, we saw in Chapter 2, Section 5.1.1.2, that there was strongly suggestive evidence that 'adjoin-alpha is a primary acquisition capacity' (Lebeaux, 1990 cited in Roeper, 1992) in L1 and L2 acquisition. During the initial stages of the acquisition of wh-movement, it is likely that some learners may progress from adjoining base-generated wh-elements in sentence initial position to adjoining moved wh-elements to pre-IP position. With further exposure to the L2, the learner may then progress to target language instantiation of wh-movement, that is, movement by substitution into Spec, CP position. Since it is standardly assumed that Subjacency constrains the number of

elements over which a wh-element may move to Spec, CP position, Subjacency may not be relevant to the grammar till movement of the wh-element to Spec, CP position has been acquired.

6.1 Role of Lexical Learning in the Instantiation of Functional Categories for the L2

In Chapter 2, we saw that a controversial issue in language acquisition is whether lexical learning of the items which are relevant to functional categories precedes the instantiation of functional categories for a particular language or whether the instantiation of functional categories precedes lexical learning of the associated items. Within the context of the acquisition of wh-movement, the role of lexical learning in the instantiation of COMP for movement is of interest. It will be recalled that in the target grammar, the lexical items which fill matrix COMP in wh-movement are auxiliaries which are moved from INFL while the lexical item which fills embedded COMP in long-distance movement in the target grammar is the complementizer 'that'.

In Chapter 2, we noted that in the acquisition of local wh-movement, an early uninverted stage occurs before the appearance of auxiliaries. With regard to the acquisition of long-distance movement, the late emergence of lexical complementizers as documented in the literature was noted. We also considered evidence for the occupation of both matrix and embedded COMP by null auxiliaries and null complementizers, respectively. It is not clear that the acquisition of local wh-movement only follows subject auxiliary inversion, with the appropriate auxiliary in matrix COMP position moved from INFL only when the wh-element is no longer adjoined to pre-IP position (either by base-generation or movement) but moved to Spec, CP position (by substitution). It is also not clear whether the acquisition of the lexical complementizer in embedded COMP is crucial to the licensing of long-distance movement.

Before local movement is acquired, learners may produce wh-questions which are not generated by movement. These questions may be characterised by features which involve non-movement such as resumptive pronouns, the absence of gaps and 'null prep'. Prior to the acquisition of long-distance movement, learners may produce transitional constructions such as 'medial' wh-questions and 'partial movement' constructions which are found in natural languages and which do not involve long-distance movement This may serve as additional evidence that learners' have other UG

options available to them than those permitted by the target grammar. Alternatively, learners may avoid producing long distance questions, producing only questions which involve local movement.

Below, we consider two types of evidence which may illuminate this issue:- wh-questions with indications of non-movement and wh-questions in which the wh-element is coindexed to an empty category in the embedded clause. Considering the first type of evidence, if characteristic features of non-movement (wh-in-situ, resumptive pronouns, the absence of gaps and 'null prep') occur in wh-questions in which lexical items associated with matrix or embedded COMP appear, then this may serve as contributive evidence that lexical learning precedes the instantiation of COMP for movement. If, on the other hand, these characteristics of non-movement occur in the absence of the lexical items which are associated with matrix and embedded COMP, then this may serve as contributive evidence that lexical learning of the items which are associated with the head of matrix and embedded COMP is necessary for the instantiation of COMP for wh-movement.

Another way of exploring the role of lexical items in the instantiation of COMP for wh-movement may be to study questions in which the wh-element is coindexed to an empty category in the embedded clause. Unlike short questions, in which the empty category may be base-generated pro (produced in the absence of wh-movement), the empty category in such questions can only be trace. This is because the empty category in the embedded clause cannot be pro, since according to Principle B, pro must be free in its governing category. Neither can it be a null constant since in these questions the empty category is not linked to a clause-external antecedent. If the lexical items which are associated with either matrix or embedded COMP or both are missing in such questions, then this may suggest that lexical learning of either or both of these items is not required for the instantiation of COMP for long distance wh-movement. If, on the other hand, the same lexical items are present, then this may suggest that the instantiation of COMP for long distance wh-movement follows the lexical realization of the associated items.

7 Summary

This chapter has presented the rationale for the empirical study which is to contribute to research on the accessibility of UG in second language acquisition. Evidence of the role which is played by UG is significant for its contribution to our understanding of the nature of the interlanguage. It has implications for whether interlanguages are 'natural languages' and for the level of ultimate attainment that L2 learners may reach.

The study is both experimental and exploratory. With regard to the experimental part of the study, we presented arguments for hypothesising an initial non-movement stage in the beginning learner which is consistent with the continued accessibility of UG. This was followed by specific predictions of how we may expect beginning Malay learners of English to behave. We also hypothesised that assuming the continued accessibility of UG, and with continued exposure to the L2, Malay learners will acquire wh-movement in conformity with UG principles. Specific predictions on how advanced Malay learners would behave were also formulated.

We also predicted that beginning learners may find some forms of grammatical extraction relatively more acceptable than other grammatical forms due to L1 influences and learnability considerations. Specific predictions on the relative acceptability of grammatical forms of wh-extraction among beginning Malay learners were outlined. We also hypothesised that with continued accessibility to UG and continued exposure to the L2, learners may be able to overcome most of the L1 constraints and problems associated with learnability; accordingly, we predicted that advanced learners and native speakers would not differ in their judgement of grammatical sentences.

The primary aim of the exploratory part of the study was stated as providing a descriptive and explanatory account of the developmental patterns obtained from Malay learners in the acquisition of wh-movement in English. Within this context, the secondary aim of this part of the study is to explore the role of lexical learning in the instantiation of COMP for wh-movement. Some suggestions were offered on how we may investigate the role of lexical learning of the items which fill matrix and embedded COMP in the acquisition of local and long-distance movement. In the next chapter, we justify our experimental methodology and describe the experimental tasks, materials, subjects and administration of the experiment.

Chapter Six

Design of the Empirical Study

Introduction

In this chapter, we justify our experimental methodology and describe the factors which influenced the experimental design, tasks, materials, subjects and administration of the experiment. The aim of the empirical study is to determine whether Malay learners at different levels of proficiency continue to have access to UG principles in the acquisition of wh-movement. The independent variable in the study is the level of proficiency of the learners while the dependent variable is the performance of learners in the experimental tasks designed.

1 Experimental Methodology

Three elicitation methods were used:- a rating task, a ranking task and a production task. These tasks obtained data which was based on absolute judgements, relative judgements and the ability to produce grammatical sentences and avoid UG violations, respectively. These three types of performance data provided us with the means to approach the underlying competence of the subjects from three different standpoints. In addition, subjects were asked to fill up a short questionnaire on their language background.

Judgement data were necessary for this study since one of our aims is to determine whether learners observe various UG constraints on wh-movement: the evidence that learners' have knowledge of what is prohibited by UG could otherwise only have been deduced from the absence of violation in production data. Grammaticality judgement tasks were an obvious means of eliciting data since they provide us with a way of accessing the intuitions of subjects through their judgements of the acceptability of sentences which conform to a particular UG principle or which violate it. While it is important not to confuse subjects' judgements of the sentences with their intuitions of these sentences (Birdsong, 1989), it is reasonable to assume that their judgements of these sentences do, at least to some extent, reflect their intuitions with regard to these sentences.

The judgements obtained from such subjects may be absolute judgements or relative judgements. Sorace (1990, 1995) argues that relative judgements may be more reliable than absolute data as a means of gathering data since they reflect the idea that linguistic constructions are not simply grammatical or ungrammatical but more or less grammatical in comparison to other linguistic constructions. She also argues that they are more reflective of the indeterminacy which is an inherent characteristic of the interlanguage. However, since it is reasonable to assume that learners form absolute and relative judgements by drawing on the same grammar, the use of both forms of judgement data may provide convergent evidence of the state of the interlanguage from different standpoints.

Judgement tasks have often been the only means of eliciting data on learners' knowledge of UG constraints. This is particularly true of those studies in which learners' knowledge of Subjacency constraints on wh-movement have been used as a means of studying the accessibility of UG to the L2 learner (Schachter, 1989; Bley Vroman, Felix and Ioup, 1988; Johnston and Newport, 1991; White, 1988). However, concern has been expressed over the use of judgement data as the sole means of obtaining data on the interlanguage (cf. Cook, 1993). The main concern is that the judgements of subjects on the acceptability of a sentence may include grammatical as well as non-grammatical considerations. For instance, researchers have noted that some lexicalizations of the same grammatical principle may be differently perceived than others (Birdsong, 1984; Ross, 1979). Other researchers have noted that judgements may be affected by the order of presentation of individual items within the task (Greenbaum, 1973) or that the mode of presentation of the test items (spoken or written) may influence their acceptability by subjects. Yet other researchers have found that among items with border-line acceptability, those items with concrete or 'low imagery' content are more frequently judged as acceptable than those with abstract or 'high imagery' content (Levelt, Van Gent, Haans and Meijers (1977). To a large extent, this biases can be controlled by using carefully designed tests (Sorace, 1990, 1995). In Section 1.1 and 1.2, we describe how we attempted to control for the influence of some of these non-grammatical factors in designing test items in the rating and ranking task, respectively. We also describe how we controlled for the effect of order of presentation of the experimental tasks in Section 3.2.

In addition to these precautionary measures, we felt that it was necessary to supplement judgement data with other forms of data, such as elicited production data. Our choice of elicited production data as a supplement to judgement data was influenced by the finding that the dimensions of acceptability judgements and linguistic performance are highly correlated, suggesting that learners rely on the same grammar for the judgement and production of sentences (Quirk and Svartvik, 1966; Greenbaum and Quirk, 1970 cited in Sorace, 1990). Accordingly, a production task was included to obtain data on how learners actually perform in the target language with regard to wh-movement. More specific justification for the design of each task with regard to the specific aims of the empirical study will follow.

1.1 The Rating Task

This task was designed to elicit learners' absolute judgements with regard to the acceptability of isolated sentences within a limited time period. A binary scale was not chosen in order to avoid forcing the subject to make dichotomous judgements which may reflect a certainty that is not felt by the subject or a determinacy that is not present in the grammar (cf Sorace, 1990, 1995). Instead, a five point rating scale in which 5 is 'good English' and 1 is 'bad English' was chosen: this has the advantage over a three point rating scale in that it allows a wider scale on which acceptability may be expressed. This is of particular relevance with respect to judgements of Subjacency as defined within the Barriers framework since we have seen that the degree with which a sentence violates Subjacency may be measured according to the number and types of barriers that are crossed by a wh-element; the 5 point rating scale allows subjects to express their ability to discriminate between strong and weak violations of Subjacency. The timed nature of the task was aimed towards ensuring that subjects' responses were immediate and spontaneous, drawing on implicit, intuitive knowledge as opposed to explicit, analysed or prescriptive knowledge (Krashen, 1981; Bialystok, 1978).

We have attempted to control for the influence of non-grammatical factors in the task by including two lexicalizations for every grammatical category tested and using common lexical items with concrete or 'low imagery' content. We also administered two randomizations of the test items. Sentence length was also carefully controlled in

terms of syllable length which is detailed in Section 2.1. However, wh-questions involving local movement were inevitably shorter than those involving long-distance movement.

1.2 The Ranking Task

This task was designed to elicit subjects' judgements of the acceptability of each sentence relative to other sentences in a given set. Relative judgements are particularly relevant to this study since we have argued that the ability of subjects to reject sentences which violate two UG principles more strongly than those which violate only one UG principle constitutes more convincing evidence that wh-movement has been acquired than the ability to only reject UG violations. The elicitation of relative judgements is also relevant to our study since we are interested in determining whether beginning subjects find certain grammatical sentences more acceptable than others due to learnability considerations and L1 constraints against certain extraction-types.

It was necessary to allow subjects unlimited time for the task since it was not possible to judge the time subjects would take to read each sentence in a particular set and to compare sentences for their relative acceptability. Since subjects were asked to make judgements in their own time, it is likely that they would draw on metalinguistic knowledge which they deemed to be relevant. The data obtained from this task may thus more directly reflect the influence of metalinguistic knowledge on the interlanguage than the judgement data obtained in the rating task. On the other hand, the other effect of the unlimited time which was allotted to subjects has the advantage of reducing the possibility that some sentences may be rejected solely because subjects are unable to parse a sentence within a restricted time period. The elicitation of relative judgements in the ranking task also has the advantage over the elicitation of absolute judgements in the rating task in that the sentences in each set only differ with respect to the particular grammatical feature being tested. It may thus be easier to control for non-grammatical factors in the judgement of these sentences than in the rating task.

As with the rating task, we endeavoured to control for extra-grammatical factors which may influence learners' judgements by including two lexicalizations for every

grammatical category tested and employing two randomizations of the test items. In this task too, common lexical items were used and syllable length of sentences controlled. Further details of syllable length are provided in Section 2.2 Additionally, in the ranking task, the order of presentation of individual items within a particular set of sentences was also varied.

1.3 The Production Task

The production task was designed to test subjects' ability to produce grammatical wh-movement and avoid the production of wh-questions which would violate UG constraints on wh-movement in response to a particular set of stimuli. The observation of common responses at each level of proficiency would allow us to describe the stages that learners pass through in their acquisition of wh-movement in the target grammar.

The dangers of relying on elicited production data alone as a means of arriving at generalisations on developmental sequences has been pointed out by several researchers (cf. Larsen-Freeman and Long, 1991). The non-appearance of a particular structure in elicited production data is open to several interpretations, such as the absence of the structure in the grammar, or the lack of certainty of the subject in using it, or sheer chance. It is thus prudent, if not necessary, to supplement elicited production data with other sources of data. Thus, the results obtained from judgement tasks may provide support that the features which are observed to be present and absent in the production task at each level are indeed characteristic of various stages of development.

Employing this method also enables us to include a qualitative dimension to the analysis of the data obtained from the study. Idiosyncratic responses which have to be collapsed into categories of common responses for statistical analysis of the data can also be separately explored for insights into the acquisitional processes. The qualitative analysis in this task not only supplements the quantitative analysis of data obtained in the same task but also the quantitative analysis of the data obtained in the judgement tasks.

1.4 The Experimental Design

Four groups of Malay learners at different levels of proficiency- low, mid, high and advanced- and a control group of British native speakers were tested. At each level, learners were split into two groups. Each group performed one of two randomized versions (A and B) of all three tasks and a cloze test. They also filled up a short questionnaire on their language background. The randomized versions of the rating task are presented in Appendix C and D, the ranking task in Appendix H and I, and the production task in Appendix L and M. Each group also performed the tasks in one of two orders of presentation, version one and two, which are described in Section 3.2. Thus, there were 10 groups of subjects at each level. Subjects who performed the tasks in the order of version one took random version A of the experimental tasks while those who perfomed the tasks in the order of version two took random version B of the tasks. The cloze test, which was used as an independent measure of proficiency, is provided in Appendix N while the language background questionnaire is provided in Appendix O.

2 Test Items

In this section, we describe the groups of linguistic categories which were tested in the rating, ranking and production task. The materials which were tested included UG violations and grammatical forms of wh-extraction. The UG violations tested were ungrammatical subject and object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases. Ungrammatical extraction from DP and CP subjects were also tested. In addition, grammatical extraction of the subject of an embedded clause in the absence of a complementizer and ungrammatical extraction of the subject in the presence of a complementizer were also tested. The grammatical sentences included local and long-distance movement. The extraction-types which were tested were subject extraction, object extraction and extraction from DP Objects. These items are listed in Table 1.

Table 1: Linguistic Categories Tested in Experimental Tasks

	UG Violations
Subjacency violations	Object Extraction from Relative Clauses
	Object Extraction from Adjuncts
	Object Extraction from Wh-Islands
	Object Extraction from Complex Noun Phrases
	Extraction from CP Subjects
	Extraction from DP Subjects
ECP violations	'That-trace effects'
Subjacency and ECP violations	Subject Extraction from Relative Clauses
	Subject Extraction from Adjuncts
	Subject Extraction from Wh-Islands
	Subject Extraction from Complex Noun Phrases
	Grammatical Extraction
Local movement:	Subject Extraction
	Object Extraction
	Extraction from DP Objects
Long-distance movement	Subject Extraction
	Object Extraction
	Extraction from DP Objects
	Grammatical equivalent of 'That-trace effects'

More details of the test materials in the three tasks are given in Section 2.1, 2.2 and 2.3.

2.1 Rating Task

UG violations were included to test whether learners would be able to reject them: the assumption is that learners who have continued access to UG principles will be able to reject violations of these principles. The UG violations included were:-

(a) Subjacency Violations

These involved object extraction from relative clauses, adjuncts, wh-islands, complex noun phrases and extraction from CP and DP subjects.

(b) ECP Violations

These were 'that-trace effects' or subject extraction from an embedded clause in the presence of a complementizer.

(c) Subjacency and ECP Violations

These involved subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases.

Grammatical stimuli of local and long-distance movement were included to test learners' knowledge of grammatical wh-movement, the assumption being that if learners have knowledge of these forms of wh-movement, they will accept them. The grammatical forms of extraction included were:-

(a) Local Movement

Sentences tested involved subject and object extraction and extraction from DP Objects.

(b) Long-distance movement

Sentences tested involved subject and object extraction and extraction from DP objects in embedded clauses. It also included the grammatical equivalent of 'that-trace effects', that is, subject extraction in the absence of a complementizer.

A total of 18 extraction-types were tested: 11 ungrammatical extraction-types and 7 grammatical extraction-types. Two lexicalizations for each category of the 18 extraction-types were used in the rating task, bringing the total number of sentences

in the task to 36. The complete set of lexicalizations used in the task are given in Appendix A. More details of the construction of each of these categories are given below:-

A. UG Violations

(1) Extraction from Relative Clauses

The relative clauses were headed by noun phrases in object position. The lexicalizations were 9-10 syllables long.

Sample Items:-
Subject extraction: Who does Devi like the dress which t had bought?
Object extraction: What did Yati find the man who repaired t?

(2) Extraction from Adjunct Clauses

The adjuncts used were the 'time' adjuncts, 'before' and 'after'. The lexicalizations were 10-12 syllables long.

Sample Items:-
Subject extraction: Who did John arrive before t had cooked the rice?
Object extraction: What did John arrive before Sue had cooked t?

(3) Extraction from Wh-Islands

The wh-islands were headed by 'where' and 'how'. The lexlicalizations were 9-10 syllables long.

Sample Items:-
Subject extraction: Who does Rina know where t bought the bag?
Object extraction: What does Rina know where Shama bought t?

(4) Extraction from Complex Noun Phrases

The complex noun phrases were headed by the nouns 'the story' and 'the news' which do not L-mark their complements. The lexicalizations were 10-14 syllables long.

Sample Items:-
Subject extraction: Who did Jim believe the story that t had stolen the car?
Object extraction: What did Jim believe the story that John had stolen t?

(5) Ungrammatical Extraction from DP subjects

The psych-verbs 'frighten' and 'bore' were used. The lexicalizations were 9-10 syllables long.

Sample Item: What do books about t bore Sharifah?

(6) Ungrammatical Extraction from CP Subjects

The passive form of the verbs were used in the main clause. The lexicalizations were 10-12 syllables long.

Sample Item: What was that Mary saw t widely believed?

(7) 'That-trace effects'

One of the lexicalizations had to be discarded due to a typographical error. The other lexicalization was 10 syllables long.

Sample Item: Who does Salinah know that t likes the book?

B. Grammatical Extraction

(1) Extraction in Simple Sentences

The same base sentence was used for subject and object extraction and for extraction from DP objects. The lexicalizations were 5-10 syllables long, with sentences involving extraction from DP Objects being inevitably longer than subject and object extraction.

Sample Items:-

Base sentence:	Daud likes stories about ghosts.
Subject extraction:	Who t likes stories about ghosts?
Object extraction:	What does Daud like t?
Extraction from DP Object:	What does Daud like stories about t?

(2) Extraction in Embedded Sentences

The lexicalizations of extraction in simple sentences were embedded in matrix clauses as CP Objects to lexicalize subject and object extraction and extraction from DP Objects in embedded sentences. The lexicalizations were 8 to 13 syllables long with lexicalizations for extraction from DP objects being longer than subject and object extraction.

Sample Items:-

Base sentence:	She knows that Daud likes stories about ghosts.
Subject extraction:	Who does she know t likes stories about ghosts?
Object extraction:	What does she know Daud likes t?
Extraction from DP object:	What does she know that Daud likes stories about t?

(3) Grammatical Equivalent of 'That-trace effects'

This was identical to the lexicalization for 'that-trace effects' except for the absence of the complementizer. The lexicalization was 9 syllables long.

Sample Item: Who does Salinah know t likes the book?

2.2 Ranking Task

There were two types of sentence sets:- sets which included a mix of grammatical and ungrammatical sentences and sets in which all the sentences were grammatical. The purpose of including sets which included a mix of grammatical and ungrammatical sentences was to test if learners were able to rank grammatical sentences over ungrammatical sentences. The assumption is that once learners have acquired knowledge of wh-movement in conformity with UG principles, they will be able to rank grammatical wh-extraction higher than ungrammatical wh-extraction. Some of these sets also tested if learners would be able to rank less ungrammatical sentences higher than more ungrammatical sentences. The assumption here is that learners who have acquired wh-movement under the constraints of UG principles will be able to rank violations of one principle higher than violations of two principles. The purpose of including grammatical sets of sentences is to test if learners assign the same rank to all the grammatical sentences in each set, the assumption being that once learners are no longer constrained by L1 constraints, they will rank all the grammatical sentences equally.

There were 9 categories of sentence sets to test:-

(1) ungrammatical extraction from relative clauses,
(2) ungrammatical extraction from adjuncts
(3) ungrammatical extraction from wh-islands
(4) ungrammatical extraction from complex noun phrases

(5) object extraction and extraction from DP objects
(6) extraction from CP Objects
(7) 'that-trace effects' and its grammatical equivalent
(8) extraction from DP subjects, DP Objects and from DP Objects
(9) extraction from CP Subjects and Objects

There were two lexicalizations for each category of sentence sets, bringing the total to 18 sets of lexicalizations.[1] The complete set of lexicalizations for the task are provided in Appendix F. Details of the sentences within each set follow:-

A. UG Violations

(1) Relative Clauses

In both sets of four sentences, two of the sentences involved ungrammatical subject and object extraction from relative clauses, as in (a) and (b), respectively in the sample set below. The other two sentences involved grammatical subject and object extraction containing relative clauses which questioned the same elements as those involving ungrammatical subject and object extraction, respectively. In the sentence with grammatical subject extraction, the relative clause is headed by the object of the sentence, as in (c). In the sentence with grammatical object extraction, the relative clause is headed by the subject of the sentence, as in (d). Since (c) and (d) differed in structural complexity, learners' performance on these grammatical sentences was not compared.

Sample Set:-
(a) Who did Zaini borrow the bag which t bought?
(b) What did Zul see the man who had stolen t?
(c) Who bought the bag which Zaini borrowed?
(d) What did the man whom Zul saw steal t?

(2) Adjuncts

In one set of four sentences, two of the sentences involved ungrammatical subject and object extraction from adjuncts which were headed by 'before'. These extractions are lexicalized in (a) and (b) respectively, in the sample set below. The other two sentences involved grammatical subject and object extraction which questioned the same elements as the sentences involving ungrammatical subject and object extraction.

[1] Due to typographical errors, we were only able to analyse the responses to one set of lexicalizations each for ungrammatical extraction from relative clauses and complex noun phrases.

These are lexicalized in (c) and (d), respectively. These sentences contained adjuncts headed by 'after'.

Sample Set:-
(a) Who did Khalid leave the shop before t had bought?
(b) What did Khalid leave the shop before Rose had bought t?
(c) Who t bought the watch after Khalid had left the shop?
(d) What did Rose buy t after Khalid left the shop?

In the other set of sentences, two of the sentences involved ungrammatical subject and object extraction from adjuncts which were headed by 'after'. The other two sentences involved grammatical subject and object extractions and questioned the same elements as the sentences involving ungrammatical extraction These sentences contained adjuncts headed by 'before'.

(3) Wh-Islands

In one set of four sentences, two sentences involved ungrammatical subject and object extraction from wh-islands headed by the wh-element 'whether'. These are lexicalized in (a) and (b), in the sample set below. The other two sentences were grammatical equivalents involving subject and object extraction from CP Objects, lexicalized in (c) and (d), respectively:-

Sample Set:-
(a) Who did Farid wonder whether t had eaten the apple?
(b) What did Paul wonder whether Sara had eaten t?
(c) Who did Farid think t had eaten the apple?
(d) What did Paul think Sara had eaten t?

In the other set of four sentences, two sentences involved ungrammatical subject and object extraction from wh-islands headed by the wh-element 'how'. The other two sentences were grammatical equivalents involving subject and object extraction from CP Objects.

(4) Complex Noun Phrases

In one set of four sentences, two sentences involved ungrammatical subject and object extraction from complex noun phrases headed by the noun phrase, 'the news'. These sentences are lexicalized in (a) and (b), respectively in the sample set below. The other two sentences were grammatical equivalents involving subject and object extraction from CP Objects and lexicalized in (c) and (d), respectively:-

Sample Set:-
(a) Who did Joe hear the news t had stolen the car?
(b) What did Joe hear the news that Robin had stolen t?
(c) Who did Joe hear t had stolen the car?
(d) What did Joe hear that Robin had stolen t?

In the other set of four sentences, two sentences involved ungrammatical subject and object extraction from wh-islands headed by the noun phrase 'the story'. The other two sentences were grammatical equivalents involving subject and object extraction from CP Objects.

(5) 'That-trace effects'

Both the sets which tested sensitivity to 'that-trace effects' contained one sentence involving ungrammatical subject extraction in the presence of a complementizer and the grammatical equivalent involving subject extraction in the absence of the complementizer. The sentences are lexicalized in (a) and (b), respectively:-

Sample Set:-
(a) Who did Halim say that t had gone home?
(b) Who did Halim say t had gone home?

(6) Extraction from DP Subjects, DP Objects and from DP Objects

Both sets consisted of three sentences, one involving grammatical subject extraction, one involving grammatical extraction from DP Objects and one involving ungrammatical extraction from DP Subjects. The extractions are lexicalized in (a), (b) and (c), respectively, in the sample set below. The psych-verb 'bore' was used in one set of sentences and 'frighten' in the other set of sentences.

Sample Set:-
(a) What t frightens Julie?
(b) What does Julie like stories about t?
(c) What do stories about t frighten Julie?

(7) Extraction from CP Subjects and Objects

Both sets of sentences consisted of one sentence involving grammatical extraction from CP Object and one sentence involving ungrammatical extraction from CP Subject. These extraction-types are lexicalized in (a) and (b), respectively:-

Sample Set:-
(a) What was it widely known that Mary had lost t?
(b) What was that Mary lost t widely known?

B. Grammatical Extraction

(1) Object extraction and extraction from DP Object

Both sets of sentences consisted of two grammatical sentences, one sentence involving object extraction and one involving extraction from DP Object, derived from the same base-generated sentence. These extractions are lexicalized in (a) and (b), respectively:-

Sample Set:-
(a) What does Marinah like t?
(b) What does Marinah like books with t?

where (a) is grammatical object extraction and (b) grammatical extraction from DP Object.

(2) Extraction from CP Objects

Both sets consisted of four sentences involving extraction from CP Objects- subject extraction, object extraction, extraction from DP Object and extraction of the passive subject. These extraction-types are lexicalized in (a), (b), (c) and (d), respectively. All these sentences were derived from the same base-generated sentence.

Sample Set:-
(a) Who did Sarinah hope t had taken a photograph of Aziah?
(b) What did Sarinah think Jalleh had taken t?
(c) Who did Sarinah hope Jalleh had taken a photograph of t?
(d) What did Sarinah hope t had been taken by Jalleh?

2.3 Production Task

The items in this task were declaratives each containing an underlined phrase. In some of these sentences, extraction of the underlined phrase would result in Subjacency or ECP violations or both whereas in other cases, grammatical wh-questions would be formed. There were 17 declaratives, 11 of which aimed to elicit ungrammatical extraction if these were permitted by the learners' grammar and 7 of which aimed to elicit grammatical extraction. We used a single stimuli for each of the categories

tested.

The purpose of including stimuli in which possible responses to the instructions of the task may have resulted in the production of UG violations was to test if subjects were constrained by UG principles relevant to wh-movement. The assumption is that once learners have acquired wh-movement, they will not produce violations of UG principles but find some way of avoiding such violations. The stimuli which aimed to elicit these violations are given below. Each stimuli is followed by the target violation which the stimuli aimed to elicit and a possible response which would have avoided the violation, termed here as 'paraphrase'.

A. UG Violations

A.1 Subjacency Violations

These included object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases:-

(1) Object extraction from Relative Clauses

Stimuli:	Ali has met the person who wrote the book.
Target Violation:	What has Ali met the person who wrote t?
Paraphrase:	What did the person whom Ali has met write?

(2) Object extraction from Adjuncts

Stimuli:	Maria came home after she bought the flowers.
Target Violation:	What did Maria come home after she bought t?
Paraphrase:	What did Maria buy before she came home?

(3) Object extraction from Wh-islands

Stimuli:	Farid knows where Faizal bought the ball.
Target violation:	What does Farid know where Faizal bought t?
Paraphrase:	What does Farid know Faizal bought?

(4) Object extraction from Complex Noun Phrases

Stimuli: Khatijah believed the story that Stewart had lost her bag.
Target violation: What does Khatijah believe the story that Stewart had lost t?
Paraphrase: What does Khatijah believe that Stewart had lost t?

5) Extraction from DP Subject

Stimuli: The news of the accident surprised Mary.
Target Violation: What did the news of t surprise Mary?
Paraphrase: Which news surprised Mary?

(6) Extraction from CP Subject

Stimuli: That John lost the money was surprising.
Target Violation: What that John lost t was surprising?
Paraphrase: What was it that John lost which was surprising.

A.2 ECP Violations

(1) 'That-trace effects'

Stimuli: Maniam knows that Ravi likes to watch films.
Target violation: Who does Maniam know that t likes to watch films?
Grammatical Response: Who does Maniam know likes to watch films?

A.3 Subjacency and ECP Violations

These included subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases:-

(1) Subject extraction from Relative Clauses

Stimuli: Roslinda lost the money which Rani had given her.
Target Violation: Who did Roslinda lose the money which t had given?
Paraphrase: Who had given Roslinda the money which she lost?

(2) Subject extraction from Adjuncts

Stimuli: Lina came into the class after the teacher had left.
Target Violation: Who did Lina came into the class after t had left?
Paraphrase: Who had left the class before Lina came in?

3) Subject extraction from Wh-islands

Stimuli: Kim found out how Ahmad became rich.
Target Violation: Who did Kim find out how t became rich?
Paraphrase: Who did Kim find out became rich?

(4) Subject extraction from Complex Noun Phrases

Stimuli: Maimunah was sad to hear the news that Akram had died.
Target Violation: Who was Maimunah sad to hear the news t had died?
Paraphrase: Who was Maimunah sad to hear had died?

The purpose of including stimuli to elicit grammatical wh-questions was to study the responses produced by learners at various levels of proficiency. The assumption is that the constructions which are commonly produced at each level of proficiency are external manifestations of the common developmental route in the acquisition of wh-movement of learners from this particular L1 background. Idiosyncractic strategies employed by learners too would provide insights into the strategies employed by individual learners before they have acquired local and long-distance movement. The stimuli aimed to elicit the following types of grammatical wh-extraction:-

B. Grammatical Extraction

B.1 Local Wh-Movement

Subject and object extraction and extraction from DP Objects in simple sentences

(1) Subject extraction

Stimuli: Faizal likes football.
Grammatical Response: Who t likes football?

(2) Object extraction

Stimuli: Karen likes chocolate.

Grammatical Response: What does Karen like t?

(3) Extraction from DP Object

Stimuli: Mary likes boys with long hair.

Grammatical Response: What does Mary like boys with t?

B.2 Long-distance movement

Subject and object extraction and extraction from DP Objects in embedded sentences

(1) Subject extraction

Stimuli: Mrs. Lim hopes that Steven went to school.

Grammatical Response: Who does Mrs. Lim hope t went to school?

(2) Object extraction

Stimuli: Rosita hopes that Zaid will buy flowers.

Grammatical Response: What does Rosita hope that Zaid will buy t?

(3) Extraction from DP Objects

Stimuli: Jim knows that Sue likes to watch films about animals.

Grammatical Response: What does Jim know that Sue likes to watch films about t?

3 Administration of the Tasks

A pilot test was carried out before the main study, details of which are given below. In the main study, the battery of tasks was administered according to the orders of presentation described below. The procedure for the adminstration of each individual task is also given below.

3.1 Pilot tests

Pilot tests were carried out using 20 Malay students who were undergraduates at Heriot Watt University, postgraduates at Edinburgh University and members of their families as subjects. In addition, a control group of 10 British native speakers were tested. The main purpose of the pilot study was to study the effectiveness of the test instruments and, where necessary, to refine them.

Examples of some of the modifications which were made as a result of the pilot study was the inclusion of examples in the instructions in the ranking task which was prompted by the clarifications requested by subjects. Another modification which was made to the question formation task after the pilot study was the inclusion of instructions on what subjects should not do, that is, produce short questions or use too many new words which are not in the original stimuli. Based on the responses to the task in the pilot study, examples were also included as to what would be inappropriate responses. The pilot study also gave us an indication of the length of time to allocate for the administration of each of the experimental tasks, allowing for the fact that the subjects in the pilot study were at high levels of proficiency in English.

3.2 Order of presentation

In the main study, the tasks were administered according to two orders of presentation. These were called versions one and two. In version one, the first task was the rating task, which was followed by the ranking task, the production task and the cloze test. In version two, the production task was presented first. This was followed by the ranking test, the rating task and finally, the cloze test. Since the tasks, and particularly the production task, were time-consuming, especially for beginners, it was hoped that varying the order of presentation of the task would control for the effect of experimental fatigue towards the end of the task.

3.3 Procedure

Each subject was assigned a particular identification number through which the researcher could identify the level of proficiency she came from, the order in which

the experimental tasks were presented to her and the randomized version of the tasks that she was administered. Instructions for each task were given when the response sheets for the particular task were given out. Written instructions with examples were provided in Bahasa Malaysia for the Malay subjects and in English for the control group of native speakers. These are provided in Appendices B, G and K for the rating, ranking and production tasks, respectively. Likewise, spoken instructions were given in Bahasa Malaysia to Malay subjects and in English to the control group.

The low, mid, and high level students were tested in the classroom, while the advanced level subjects were mostly tested at their place of work. Within the classroom context, all the subjects did the same task together. The tasks generally took about two and a half hours to complete at the low level and one hour at the advanced and native speaker level.

When the rating task was administered in classroom situations, isolated sentences were projected one at a time onto an overhead projector while the sentences which followed were obscured from view. Outside the classroom contexts, as was the case with the advanced level learners who were mostly administered the tasks at their place of work, a large pocket holder with transparent pockets was used for ease of mobility. Each pocket contained a single sentence which had been printed and magnified so that it was easily legible at a distance. After the required time period, the pocket was flipped over so that the next sentence was on display. Each isolated sentence was displayed for a period of 10 seconds. This was the approximate time that the pilot study had shown was required for subjects to read each sentence and produce a response. Subjects were given an answer sheet on which they could rate each item. The instructions for the task in English were as follows:-

> 'You will be given 10 seconds to read each of the following sentences. If you think the sentence is good English put a tick on number 5. If you think the sentence is bad English, put a tick on number 1. If you think the sentence is neither good English or bad English, put a tick on number 2, 3 or 4. Please do not change the tick you have given for each sentence.'

One example was given of how a sentence which was considered to be 'bad English' would be marked on the rating scale and one of how a sentence which was considered

to be 'good English' would be marked. The instructions for the rating task in Malay and English, with examples, are given in Appendix B. The layout of the answer sheet is also illustrated in Appendix E.

The instructions for the ranking task are given below:-

> 'In this exercise, you are given several sets of sentences. Please rank the sentences in each set in the following manner:-
>
> 1. Choose the best sentence in the set and fill the box next to it with number 1. If you think there are 2 or more sentences which are equally good, fill the boxes next to them with number 1.
> 2. Next choose the second best sentence in the set and fill the box next to it with number 2. If you think there are 2 or more sentences which are equally good, fill the boxes next to them with number 2.
> 3.Continuing in this manner, fill all the boxes in the set.'

Two examples followed, one in which the grammatical sentences were equally ranked (1) and one in which a set of grammatical and ungrammatical sentences were ranked from (1) to (4). The instructions for the ranking task, with examples, are given in Appendix G.

Instructions for the production task read as follows:-

> 'Please read the following sentences which contain an underlined phrase. Then, form a question in order to get the information contained in the underlined phrase. As far as possible, use only the words in the sentence. Do not shorten the sentence or use new words unless there is no other way to form the question.'

This was followed by examples of what would be considered to be appropriate and iinappropriate responses to the stimuli. The instructions in Malay and English, and the examples are given in Appendix K.

4 Subjects

The learners who took the experiment were all native speakers of Malay. The underlying assumption in the selection of the three lower level learner groups is that

with increased exposure to the L2, learners become more proficient in the language. The learners at the lowest level of proficiency in English were students of Secondary Two (aged approximately 14 years old), those at the next highest level of proficiency were from Secondary Four (aged approximately 16 years old) while those at the next level of proficiency were from Lower Sixth (aged approximately 18 years old). The choice of subjects from these levels of education was decided on the basis of two factors. Firstly, since it has been found that children's ability to deal with metalinguistic tasks increases with age (Hakes, 1980 cited in Birdsong, 1989), it was felt that with children below the age of twelve, the variable of age may interact with exposure to the L2 in influencing their judgements. This consideration ruled out students at the primary level of education. At the level of secondary education, the selection of the levels of subjects was dictated by the policy of the Ministry of Education which disallows access to students who face government examinations in the current academic year for the purposes of research. This ruled out students of Secondary Three, Secondary Five and Upper Sixth, the levels at which students have to sit for national examinations, as was discussed in Chapter 4, Section 2.1. A gap of a year between levels of subjects was decided upon to allow for substantial differences in proficiency. The results of the cloze test which are given in Appendix P confirmed that students at these levels could indeed be grouped into three groups of proficiency: low, mid and high.

The responses to the questionnaire on language background which are also tabled in Appendix P revealed that the majority of the students had their first exposure to English at school-going age, that is, at the age of 7. The language that the majority of the students spoke to their family, their friends and society at large was Bahasa Malaysia. Judging from the responses on the questionnaire only a small minority of the students used English outside of the classroom context with any regularity at all. The vast majority of the students had never been abroad to an English-speaking country.

The last group of Malay subjects, those at the advanced level of proficiency, were chosen from a larger group who were introduced to the researcher through members of the family and friends. The selection criterion which was used to determine that they were indeed advanced learners of English was their performance on the cloze

test. Only those who obtained scores which were similar to those obtained by native speakers were used as subjects for this group. As is shown in Appendix P, these subjects came from a variety of professional and educational backgrounds and ranged from the early twenties to fifties in age. They included members of staff of the Ministry of Education in Penang, the Language Centre and other departments in the University of Science, professionals who had been educated in the States or the United Kingdom, teachers of English and university undergraduates who were training to be English teachers.

In contrast to the Malay students at the low, mid and high group, advanced level subjects often used both Bahasa Malaysia and English with their friends and society at large. Like the students in secondary school, they too used Bahasa Malaysia with their family. Many of these subjects had the advantage in English of receiving at least part of their education with English as the medium of instruction, either locally or abroad for their undergraduate or postgraduate education.

The subjects who formed the control group in the experiment were educated British native speakers, resident in the U.K. who were introduced by friends and willing to participate. None of these subjects had any knowledge of Linguistics or Applied Linguistics or experience of English teaching.

The numbers of subjects who were tested at each level were as follows:-

Low level	60
Mid level	60
High level	54
Advanced level	51
Native speakers	21

5 Statistical analyses of results

After records for individual subjects with the responses for each task had been compiled, the data obtained from each of the tasks were analysed using the BMDP Statistical Package in the following manner:-

(1) Rating Task

(a) Analyses of variance (ANOVA) by subjects were run on the results obtained.. The factors tested included subject variables such as the level of proficiency and linguistic variables such as extraction type, construction-type and level of embedding.

(b) Where the F value was significant, post-hoc Tukey tests were run on the means in order to make pair-wise comparisons.

(2) Ranking Task

(a) Friedman two-way Analysis of Variance tests were run on the ranking data obtained.

(b) Friedman pairwise comparisons were run where the results obtained for (2a) were significant.

(3) Production Task

(a) The data obtained was classified into categories on which chi-square tests were run.

(b) The statistical analyses were complemented by qualitative analysis of data which did not occur in large enough numbers to be classified into groups for statistical analysis.

6 Summary

In this chapter, the experimental methodology of the study was described. This included the rationale for the choice of the various elicitation tasks and the description of the experimental design, the test materials, the administration of the tasks and the subjects. Chapters 7 to 9 will present the results of the rating, ranking and production tasks, respectively. Finally, the results obtained will be discussed in Chapter 10.

Chapter 7

Rating Task Results

Introduction

This chapter presents the results of the rating task. As explained in Chapter 6, the rating task aimed to elicit absolute judgements with respect to the acceptability of ungrammatical and grammatical extraction among learners and native speakers.

1 Ungrammatical Extraction

Our hypotheses on ungrammatical extraction in the rating task were formulated in terms of developmental stages in the acquisition of wh-movement for beginning, intermediate and highly proficient learners of English. In the initial stages, we hypothesised that learners may not have acquired wh-movement and so would not have access to the UG principles which are relevant to movement, namely Subjacency and the ECP. Accordingly, we predicted that beginning learners (low level learners) would fail to reject Subjacency violations involving ungrammatical subject and object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases. Since they do not possess knowledge of Subjacency violations, they would also not possess knowledge of the extent to which Subjacency is violated. Accordingly, we predicted that they would fail to reject strong Subjacency violations (object extraction from relative clauses and adjuncts) more markedly than weak Subjacency violations (object extraction from wh-islands and complex noun phrases). We also predicted that they would also fail to reject the less weak of two weak Subjacency violations (object extraction from wh-islands) more decisively than the weaker of the violations (object extraction from complex noun phrases). We further predicted that beginning learners who are not guided by UG principles would not be able to discriminate between strong UG violations (extraction from CP and DP subjects) and weak UG violations ('that-trace effects').

We also predicted that since beginning learners do not have access to UG principles which are relevant to movement, they would not be able to discriminate between sentences which violate one UG principle and sentences which violate two UG principles. Accordingly, they would fail to reject sentences which violate two UG

principles (subject extraction from relative clauses, adjuncts, wh-islands, complex noun phrases) more markedly than sentences which violate a single UG principle (object extraction from the same clauses). They would also fail to discriminate between ungrammatical 'that trace-effects' and their grammatical equivalent.

The null hypotheses for the specific predictions are given below. Beginning learners:-

(a) Would reject Subjacency violations involving ungrammatical subject and object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases

(b) Would reject strong Subjacency violations (extraction from relative clauses and adjuncts) as more severely ungrammatical than weak Subjacency violations (extraction from wh-islands and complex noun phrases)

(c) Would reject the less weak of two weak Subjacency violations (extraction from wh-islands) more decisively than the weaker of the two violations (extraction from complex noun phrases)

(d) Would reject strong UG violations (extraction from CP and DP subjects) as more severely ungrammatical than weak UG violations ('that-trace effects')

(e) Would reject sentences which violate two UG principles (subject extraction from relative clauses, adjuncts, wh-islands and com plex noun phrases) more strongly than sentences which violate a single UG principle (object extraction from the same clauses)

(f) Would discriminate between ungrammatical 'that-trace effects' and their grammatical equivalent

Assuming that with continued exposure to the L2, learners would acquire wh-movement and that the UG principles which are relevant to movement continue to be accessible, we predicted that intermediate learners (mid- and high-level subjects) would reject Subjacency violations more firmly than beginning learners. We also predicted that they would possess the knowledge to discriminate between Subjacency violations. Specifically, we predicted that intermediate learners would reject strong Subjacency violations (object extraction from relative clauses and adjuncts) more markedly than weak Subjacency violations (object extraction from wh-islands and complex noun phrases). We also predicted that intermediate learners would reject the less weak of two weak Subjacency violations (object extraction from wh-islands) more decisively

than the weaker of two weak Subjacency violations (object extraction from complex noun phrases).

During the ongoing process of acquiring wh-movement, we also hypothesised that intermediate learners would discriminate between sentences which violate one UG principle and sentences which violate two UG principles. Specifically, we predicted that intermediate learners would reject sentences which violate Subjacency and the ECP (subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases) as more severely ungrammatical than sentences which violate a single UG principle (object extraction from the same clauses).

The null hypotheses for intermediate learners are that they:-

(a) Would not reject ungrammatical extraction more strongly than beginning learners

(b) Would not reject strong Subjacency violations more decisively than weak Subjacency violations

(c) Would not reject the less weak of two weak Subjacency violations more markedly than the weaker of the two weak Subjacency violations

(d) Would not reject sentences which violate Subjacency and the ECP as more severely ungrammatical than sentences which violate only Subjacency

(e) Would discriminate between 'that-trace effects' and their grammatical equivalent

When learners had reached a certain stage, we hypothesised that they would reach a 'ceiling effect' with respect to their ability to discriminate between ungrammatical forms of extraction (cf. Martohardjono, 1991). The barriers against wh-movement would be so firmly established that advanced learners would rate ungrammatical forms of wh-extraction as less acceptable than beginning or intermediate learners. We also predicted that they would decisively reject all Subjacency violations, without making discriminations based on the strength of the violation. Specifically, we predicted that advanced level learners and native speakers would not find strong Subjacency violations more unacceptable than weak Subjacency violations. We also predicted that they would not reject the less weak of two weak Subjacency violations more firmly than the weaker violation.

However, we predicted that they would reject strong UG violations (extraction from CP and DP subjects) more decisively than weak UG violations ('that-trace effects') Recalling the high acceptability of 'that-trace effects' among native speakers in the literature, we predicted that advanced learners and native speakers would not reject sentences with 'that-trace effects' more strongly than their grammatical equivalent. Additionally, we predicted that learners would not reject sentences which violate two UG principles, Subjacency and ECP, more markedly than sentences which violate only Subjacency. Specifically, we predicted that they would not find subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases to be less acceptable than object extraction from the same clauses. We further predicted that advanced level learners would not differ from native speakers in their conformity to UG principles related to wh-movement.

The null hypotheses for advanced level learners and native speakers of English are that they :-

(a) Would not reject ungrammatical forms of extraction more strongly than beginning and intermediate learners

(b) Would reject strong Subjacency violations more decisively than weak Subjacency violations

(c) Would reject the less weak of two weak Subjacency violations more firmly than the weaker violation

(d) Would not reject strong UG violations (extraction from CP and DP subjects) more firmly than weak UG violations ('that-trace effects')

(e) Would reject sentences which violate Subjacency and the ECP more markedly than sentences which violate only Subjacency

(f) Would discriminate between 'that-trace effects' and their grammatical equivalent

A further null hypothesis is that advanced level learners would not reject violations of UG principles related to wh-movement as decisively as native speakers.

1.1 Ungrammatical Extraction from Relative Clauses, Adjuncts, Wh-islands and Complex Noun Phrases

In order to study the unacceptability of ungrammatical subject and object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases, a four-way repeated measures Analysis of Variance (ANOVA) was run on the results obtained. The factors tested were stage, version, construction-type and extraction-type. Since the interaction between construction-type and stage is significant ($F(12, 708) = 5.36$, $p < 0.0000$) a Tukey test at critical value $q = 5.01$ was run on the means reported in Table 7.1.

TABLE 7.1: Mean Ratings for Ungrammatical Extraction from Relative Clauses, Adjuncts, Wh-Islands and Complex Noun Phrases

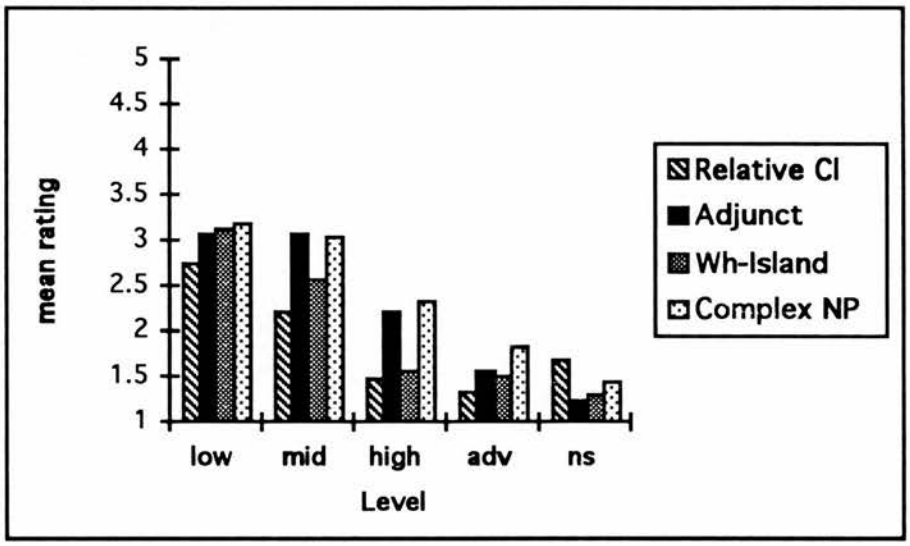
	low	mid	high	adv	ns
Relative Cl	2.73750	2.18333	1.46296	1.31144	1.66667
Adjunct	3.06506	3.04167	2.18203	1.55933	1.21428
Wh-Island	3.12083	2.54259	1.55324	1.49463	1.27381
Complex NP	3.15657	3.01960	2.30204	1.79902	1.41667

The graph in Figure 7.1 shows that with increasing exposure to the L2, there is a decrease in the acceptability of ungrammatical extraction. Subjects at the low level rated ungrammatical extraction from relative clauses higher than those at the high, advanced and native speaker levels, with statistically significant differences of 1.2745, 1.4261 and 1.0708, respectively in the means. Mid-level subjects too found ungrammatical extraction from relative clauses significantly more acceptable than those at the high and advanced levels, with differences of 0.7024 and 0.8719, respectively in the means.

With respect to ungrammatical extraction from adjuncts, the graph in Figure 7.1 clearly shows that there is a decrease in acceptability with continued exposure to the L2. Subjects at the low level rated these sentences higher than those at the high, advanced and native speaker levels; the differences in the means of 0.8830, 1.5057 and 1.6008, respectively are statistically significant. Mid-level subjects too found extraction from adjuncts significantly more acceptable than subjects at the high, advanced and native speaker levels with differences of 0.8596, 1.4823 and 1.5774, respectively. Subjects

at the high level rated ungrammatical extraction from adjuncts higher than those at the advanced and native speaker level; the significant differences are 0.6227 and 0.7177, respectively.

FIGURE 7.1: Mean Ratings for Ungrammatical Extraction from Relative Clauses, Adjuncts, Wh-Islands and Complex Noun Phrases



This pattern of decreasing acceptability was also seen in response to extraction from wh-islands. This is also clearly seen in the graph in Figure 7.1. Subjects at the low level found ungrammatical extraction from wh-islands more acceptable than those at the high, advanced and native speaker levels with significant differences of 1.5676, 1.6262 and 1.8470, respectively. Subjects at the mid level too rated ungrammatical extraction from wh-islands significantly higher than those at the high, advanced and native speaker levels with differences of 0.9893, 1.0480 and 1.2688, respectively.

With respect to extraction from complex noun phrases, subjects at the low level rated these higher than those at the high, advanced and native speaker levels; the differences of 0.8545, 1.3575 and 1.7399, respectively, are statistically significant. Subjects at the mid level too found extraction from complex noun phrases to be more acceptable than those at the high, advanced and native speaker levels with significant differences of 0.7176, 1.2206 and 1.6029, respectively, in the means obtained. High-level subjects too rated extraction from complex noun phrases higher than native speakers; the

difference of 0.8854 in the means is statistically significant. This decrease in acceptability of extraction from complex noun phrases with continued exposure to the L2 can be clearly seen in the graph in Figure 7.1.

The above findings confirm the prediction that with continued exposure to the L2, there is a decrease in the acceptability of ungrammatical extraction from relative clauses, adjuncts, wh-islands and complex noun phrases. They also confirm the prediction that advanced-level subjects do not differ significantly from native speakers in their rejection of these sentence-types.

1.2 Relative Acceptability of Subjacency Violations

In order to examine the relative acceptability of Subjacency violations at the four levels of proficiency, a three-way ANOVA was run on ungrammatical object extraction. This revealed significant main effects of stage ($F(4, 236) = 69.56$, $p < 0.0001$), version ($F(1, 236) = 25.53$, $p < 0.0001$) and construction-type ($F(3,708) = 32.40$, $p < 0.0001$). In order to investigate the significant interaction between construction-type and stage ($F(12, 708) = 6.35$, $p = 0.0001$), post hoc Tukey tests were run on the means in Table 7.2 at the critical value of $q = 3.86$.

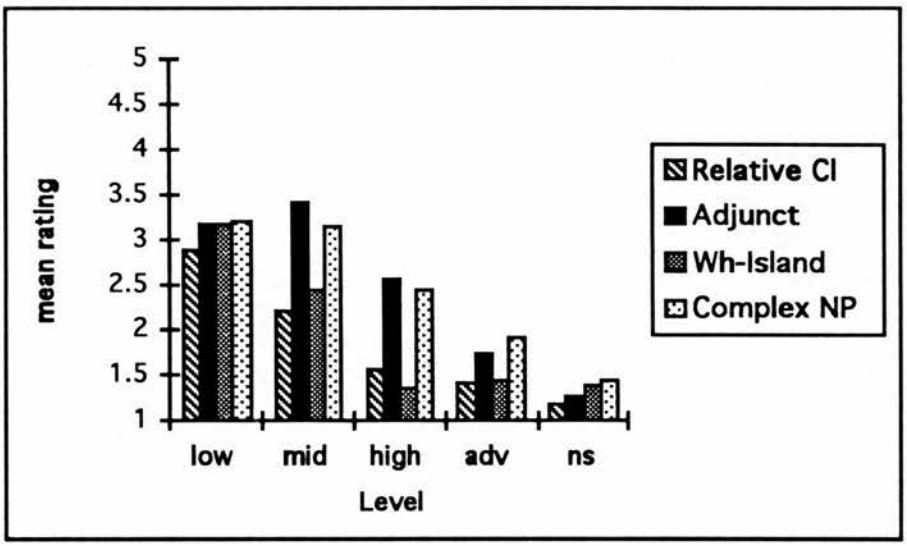
TABLE 7.2: Mean Ratings for Ungrammatical Object Extraction

	low	mid	high	adv	ns
Relative Cl	2.86667	2.18333	1.54630	1.41560	1.16667
Adjunct	3.15513	3.39167	2.54000	1.71483	1.26190
Wh-Island	3.18333	2.42500	1.32870	1.42390	1.35714
Complex NP	3.20481	3.13920	2.43741	1.89216	1.42857

At the low level, there were no differences between ungrammatical object extraction from the four constructions. This is in conformity with the prediction that beginning learners would not be able to discriminate between strong and weak Subjacency violations until they have acquired wh-movement. As is clear from the graph in Figure 7.2, differences in the relative acceptability of Subjacency violations are most clearly seen at the mid and high levels.

Object extraction from relative clauses was rated lower than object extraction from complex noun phrases, with significant differences of 0.9559 and 0.8911, at the mid and high levels, respectively. This is in conformity with the prediction that once wh-movement has been acquired, learners would find strong Subjacency violations (extraction from relative clauses) less acceptable than weak violations (extraction from complex noun phrases).

FIGURE 7.2: Mean Ratings for Ungrammatical Object Extraction



We can also see from the graph in Figure 7.2 that at the mid and high levels, learners were also able to discriminate between two weak UG violations in accordance with prediction: object extraction from complex noun phrases (the weaker of the two weak Subjacency violations) received higher acceptability ratings than wh-islands (the less weak of the two weak Subjacency violations). The significant differences in the means between these two weak violations are 0.7142 at the mid level and 1.1087 at the high level.

Surprisingly, the graph in Figure 7.2 also shows that object extraction from adjuncts was rated higher than object extraction from wh-islands at the mid and high levels, with significant differences of 0.9667 and 1.2113: this disconfirms the prediction that a strong violation (extraction from adjunct) would be rejected more strongly than a weak violation (extraction from wh-island).

No significant differences were found in the means for object extraction from the four constructions at the advanced and native speaker levels. This is in conformity with the prediction that once learners have reached a certain level in the acquisition of wh-movement, they would reject all Subjacency violations with the same degree of determinacy.

1.3 Relative Acceptability of Ungrammatical Subject and Object Extraction

We have already noted that ungrammatical subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases violates two UG principles, Subjacency and the ECP; ungrammatical object extraction from the same clauses violates only one UG principle, Subjacency. In order to test whether learners discriminate between constructions which violate two UG principles and those which violate only one UG principle, 2-way repeated ANOVAs were run on the responses to each of the four construction-types. Figures 7.3, 7.4, 7.5 and 7.6 graphically represent the means for ungrammatical object extraction and ungrammatical subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases, respectively. The means for ungrammatical object extraction are reported in Table 7.2 while the means for ungrammatical subject extraction are provided in Table 7.3.

TABLE 7.3: Mean Ratings obtained for Ungrammatical Subject Extraction from Relative Clauses, Adjuncts, Wh-Islands and Complex Noun Phrases

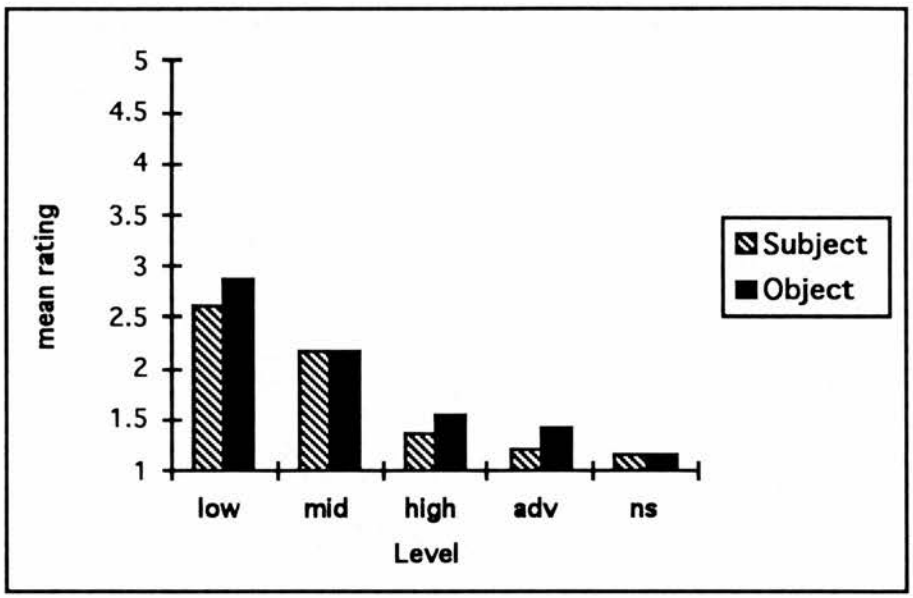
	low	mid	high	adv	ns
Relative Cl	2.60833	2.18333	1.37963	1.20728	1.16667
Adjunct	2.97500	2.69167	1.82407	1.40383	1.16667
Wh-Island	3.05833	2.66018	1.77778	1.56536	1.19048
Complex NP	3.10833	2.90000	2.16667	1.70588	1.40476

1.3.1 Extraction from Relative Clauses

The ANOVA run on relative clauses revealed that the main effect of stage ($F(4, 236) = 51.05$, $p < 0.0001$) is significant but that extraction-type ($F(1, 236) = 2.73$, $p = 0.0997$) and the interaction between extraction-type and stage is not significant. This is

contrary to the prediction that once learners have begun to acquire wh-movement they would reject subject extraction from relative clauses more firmly than object extraction.

FIGURE 7.3: Mean Ratings obtained for Ungrammatical Extraction from Relative Clauses



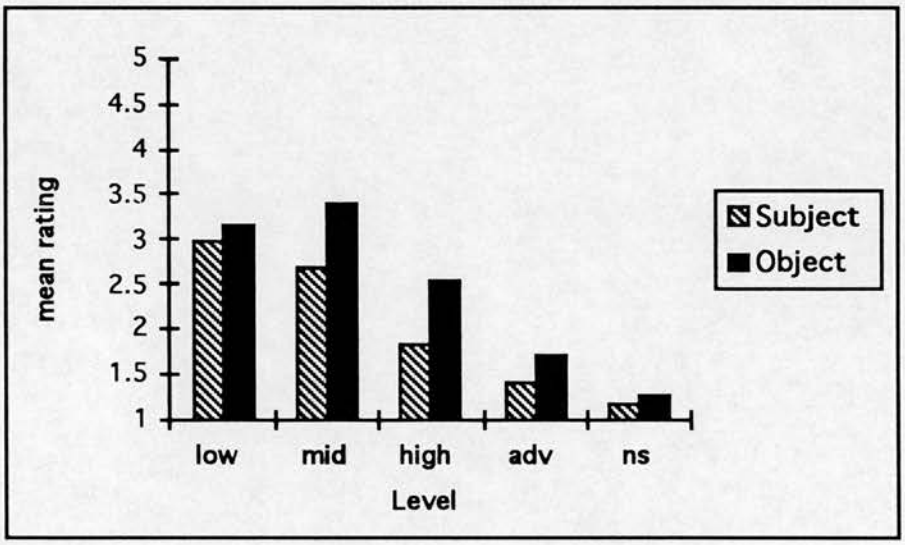
Tukey tests run on the means obtained at each stage at q = 3 86 revealed that the means obtained at the low (2.7375) level were higher than that obtained at the mid (2.1833), high (1.4630), advanced (1.3114) and native speaker (1.1667) levels with significant differences of 0.5542, 1.2745, 1.4261 and 1.5708, respectively. The means obtained at the mid level (2.1833) were also lower than that obtained at the high (1.4630), advanced (1.3114) and native speaker (1.1667) levels with significant differences of 0.7204, 0.8719 and 1.0167 respectively. This decrease in acceptability with increased exposure to the L2 can be seen in the graph Figure 7.3. This is in conformity with the prediction that with increased exposure to the L2, learners would find subject and object extraction from relative clauses increasingly unacceptable.

1.3.2 Extraction from Adjuncts

The ANOVA run on the responses for extraction from adjuncts found a significant interaction between extraction-type and stage (F (4, 236) = 2.58, p = 0.379). The graph in Figure 7.4 shows a clear developmental trend towards rejection of

ungrammatical subject and object extraction from adjuncts. Tukey tests were run at a critical value of q = 4.47. This revealed that the means for subject extraction at the low level was higher than those obtained from the high, advanced and native speaker levels with significant differences of 1.1509, 1.5712, 1.8083, respectively in the means. The means for subject extraction at the mid level too was higher than that from the high, advanced and native speaker levels with significant differences of 0.8676, 1.2878 and 1.5250, respectively. High-level subjects rated these sentence-types as more acceptable than native speakers with a significant difference of 0.6574 in the means. There are no significant differences between the means obtained at the advanced level and those obtained at the native speaker level. These findings are in conformity with the prediction that with continued exposure to the L2, there would be a decrease in the acceptability of ungrammatical subject extraction from adjuncts. They also support the prediction that advanced-level subjects and native speakers do not differ with respect to observing the UG constraint against subject extraction from adjuncts.

FIGURE 7.4: Mean Ratings for Ungrammatical Extraction from Adjuncts



The mean obtained for object extraction from the low level is significantly higher than that obtained at the high, advanced and native speaker levels with differences of 0.6151, 1.4403 and 1.8932 respectively. At the mid level too, the means for object extraction is significantly higher than that obtained at the high, advanced and native speaker level with differences of 0.8517, 1.6768 and 2.2198 respectively. The means

for object extraction at the high level is also significantly higher than the means obtained at the advanced and native speaker level with differences of 0.8252 and 1.2781, respectively. These results support the hypothesis that with more exposure to the L2, learners would reject ungrammatical object extraction more determinately than at the initial stages. In conformity with prediction, advanced-level subjects do not significantly differ from native speakers in their rating of this UG violation.

Comparing the means obtained for ungrammatical subject and object extraction from adjuncts, at the low level, there is no significant difference in the means obtained for subject and object extraction, in conformity with the prediction that learners who have not acquired wh-movement would not be able to discriminate between sentences which violate two UG principles (ungrammatical subject extraction) and those which violate a single UG principles (ungrammatical object extraction). The difference between ungrammatical subject and object extraction is significant at the mid level, where the means for object extraction was higher than that obtained for subject extraction with a significant difference of 2.1298 in the means. This supports the prediction that once learners have begun to acquire wh-movement, they would reject a sentence which violates two UG principles more strongly than one which only violates one UG principle. At the high, advanced and native speaker levels, there are no significant differences in the means obtained between subject and object extraction from adjuncts. This supports the hypothesis that once the acquisitional process has reached a certain level, learners would reject all UG violations, without discriminating between violations of one or two UG principles.

1.3.3 Extraction from Wh-Islands

The ANOVA run on the means for ungrammatical extraction from wh-islands revealed a significant interaction between extraction-type and stage ($F(4, 241) = 2.61$, $p = 0.0363$). As the graph in Figure 7.5 clearly reveals, there is a developmental trend towards rejection of these extraction-types. Tukey tests run at a critical value of $q = 4.47$ revealed that low-level subjects rated subject extraction significantly higher than those at the high, advanced and native speaker levels with differences of 1.2806, 1.4930 and 1.8679, respectively. Mid-level subjects too found these sentences significantly more acceptable than subjects at the high, advanced and native speaker

levels with differences of 0.8824, 1.0948 and 1.4697, respectively. Subjects at the high level also found these sentences more acceptable than those at the advanced level with a significant difference of 0.5873, in the means. This decrease in the acceptability of subject extraction from wh-islands with increased exposure to the L2 is clearly seen in the graph in Figure 7.5. No significant difference is found in the acceptability of subject extraction from wh-islands between advanced level learners and native speakers. This bears out the prediction that advanced level learners would not differ from native speakers in their conformity to UG principles with regard to ungrammatical subject extraction from wh-islands.

FIGURE 7.5: Mean Ratings for Ungrammatical extraction from Wh-Islands

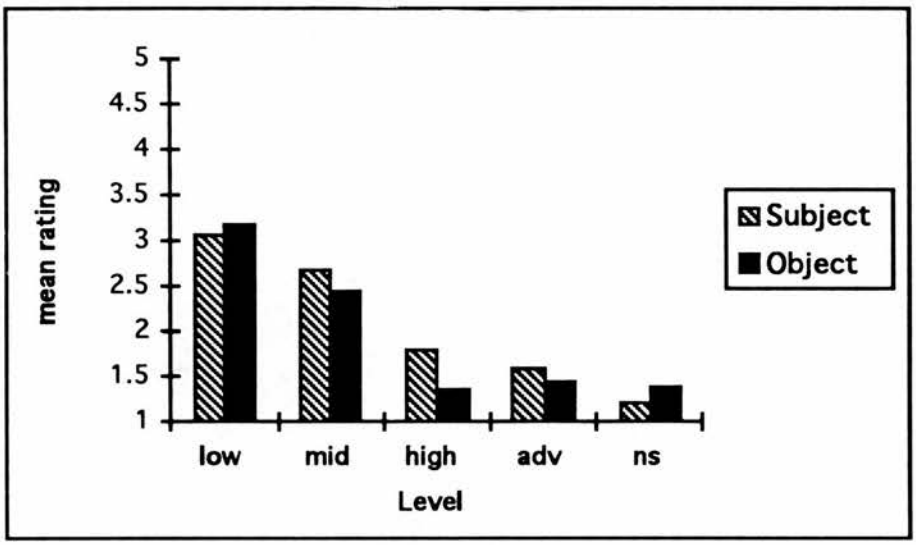


Figure 7.5 also shows that with continued exposure to the L2, subjects find ungrammatical object extraction from wh-islands increasingly unacceptable. The means obtained at the mid, high, advanced and native speaker levels are significantly higher than those at the low level with differences of 0.7583, 1.8546, 1.7594 and 1.8262, respectively. The means obtained at the mid level are also significantly higher than those obtained at the high, advanced and native speaker levels with differences of 1.0963, 1.0011 and 1.0679, respectively. These findings support the prediction that once learners have acquired wh-movement, they would reject ungrammatical extraction from wh-islands. No significant differences were found between advanced-level subjects and native speakers with regard to the acceptability of ungrammatical object

extraction from wh-islands, in conformity with prediction.

Furthermore, no significant differences were found between ungrammatical subject and object extraction from wh-islands and native speakers at any of the five levels. This supports the prediction that beginning learners who have not completed the acquisitional process would not discriminate between sentences which violate one UG principle and those which violate two UG principles. It also confirms the prediction that subjects who have completed the acquisitional process would not favour sentences which violate two UG principles over those which violate only one UG principle but reject both sentence-types. However, the prediction that once learners have begun the acquisitional process with regard to wh-movement they would favour sentences which violate one UG principle over those which violate two UG principles is not borne out.

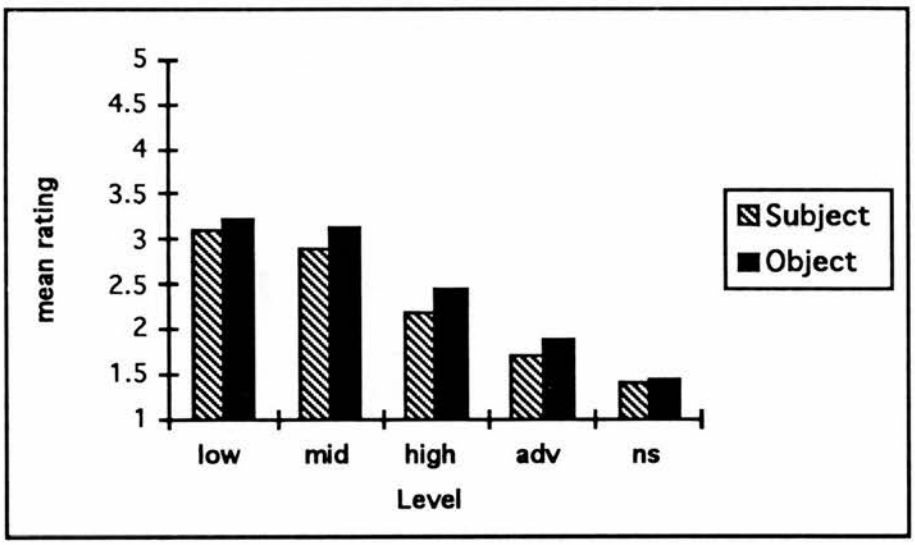
1.3.4 Extraction from Complex Noun Phrases

ANOVAs run on the means for ungrammatical extraction from complex noun phrases revealed significant main effects of stage ($F(4, 236) = 40.87$, $p < 0.0001$) and extraction-type ($F(1, 236) = 5.01$ $p = 0.0261$) but no significant interactions between extraction-type and stage. Tukey tests run on the means for ungrammatical extraction at each stage revealed that the means at the low level (3.1566) are significantly higher than the means at the high (0.8545), advanced (1.3575) and native speaker levels (1.7399) with differences of 0.8545, 1.3575 and 1.7399, respectively. The means obtained from the mid level (3.0196) are also significantly higher than the means obtained at the high, advanced and native speaker (1.6029) levels, with differences of 0.7176, 1.2206 and 1.6029, respectively. The means for high-level subjects (1.4167) too are significantly higher than native speaker subjects with a difference of 0.8854. This decrease in the acceptability of ungrammatical extraction from complex noun phrases with increased exposure to the L2 can be clearly seen in the graph in Figure 7.6 and is in conformity with prediction.

The means for subject extraction (2.4146) were lower than the means for object extraction (2.5966) at each level. This difference in the acceptability of the two extraction-types at each level can be seen in the graph in Figure 7.6. These findings are contrary to the prediction that low level learners would not be able to discriminate

between sentences which violate one and two UG principles. It is also contrary to the prediction that advanced-level subjects and native speakers would not discriminate between the two extraction-types once they have reached a certain level in the acquisition of wh-movement.

FIGURE 7.6: Mean Ratings for Ungrammatical Extraction from Complex Noun Phrases



The findings do, however, confirm the prediction that learners who have begun the acquisitional process (but not completed it) would reject violations of two UG violations (ungrammatical subject extraction) more firmly than violations of a single UG violation (ungrammatical object extraction).

1.4 Strong and Weak UG Violations

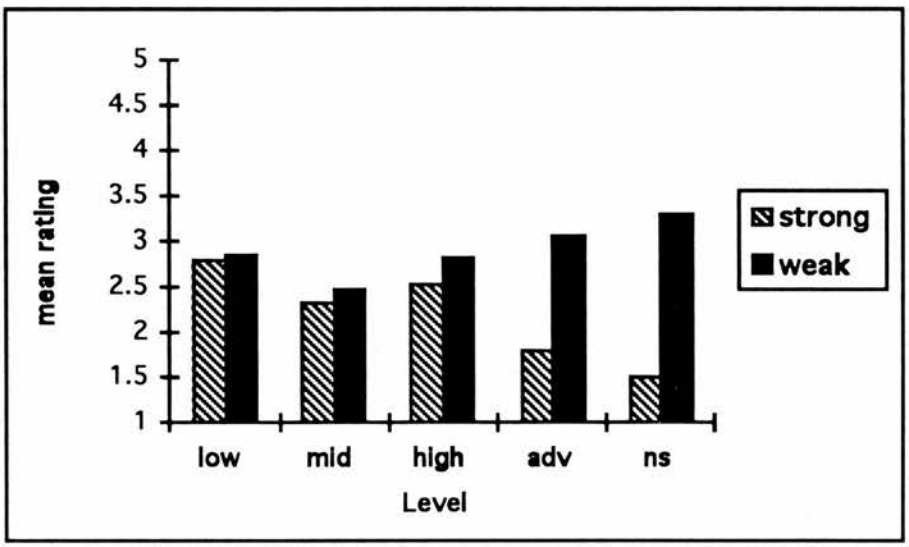
In order to examine whether learners discriminate between strong and weak UG violations, a three-way ANOVA was carried out, with the factors construction-type (strong or weak UG violation), stage and version. The means which were used for strong violations were the combined means in response to extraction from CP and DP subjects while the means for the weak violations were the means obtained for 'that trace effects.' These means are reported in Table 7.4. The significant main effects are stage ($F(4, 236) = 3.05$, $p = 0.0177$), version ($F(1, 236) = 46.41$, $p < 0.0001$) and construction-type ($F(1, 236) = 53.40$, $p < 0.0001$). Significant interactions are

between stage and version ($F(4, 236) = 11.46$, $p < 0.0001$), construction-type and stage ($F(4, 236) = 11.24$, $p < 0.0001$), construction-type and version ($F(1, 236) = 11.07$, $p < 0.0001$) and construction-type and stage and version ($F(4, 236) = 2.59$, $p = 0.0376$).

TABLE 7.4: Mean Ratings obtained for UG Violations

	low	mid	high	adv	ns
Strong	2.79167	2.31187	2.53130	1.79126	1.47619
Weak	2.83103	2.45417	2.81481	3.03843	3.28571

FIGURE 7.7: Mean Ratings obtained for UG Violations



Comparing the acceptability of strong violations against weak violations at each level, we found that at the advanced level, the means obtained for the former are significantly lower than the means obtained for the latter with a difference of 1.8095. The means obtained for strong violations from native speakers is also significantly lower than the means obtained for weak violations with a difference of 1.8095. This differentiated response to UG violations can be seen in the graph in Figure 7.7. These results bear out the prediction that beginning learners who have not acquired wh-movement would not discriminate between strong and weak UG violations. The results are also in conformity with the prediction that learners who have acquired wh-movement through

continued accessibility to UG principles would reject strong UG violations more decisively than weak UG violations.

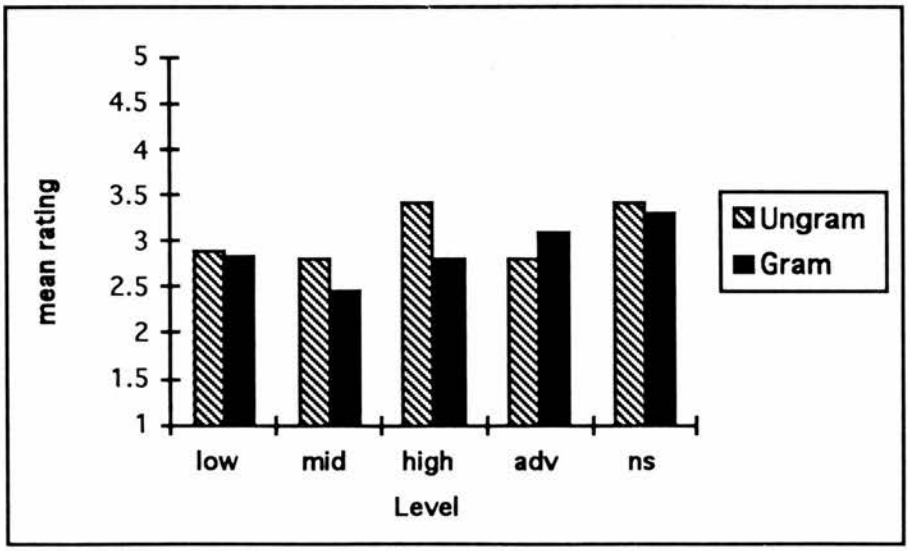
1.5 'That-trace effects' and its grammatical equivalent

A three-way ANOVA run on sentences with 'that-trace effects' and its grammatical equivalent found that neither extraction-type (of the embedded subject in the presence or absence of a complementizer) nor the interaction of extraction-type with stage are significant. This can be seen in Figure 7.8 which graphically represents the means reported in Table 7.5. The lack of discrimination between grammatical and ungrammatical wh-extraction supports the prediction that with continued exposure to the L2, learners, like native speakers, would not find 'that-trace effects' less acceptable than the grammatical equivalent.

TABLE 7.5: Mean Ratings for 'That-trace effects' and its Grammatical Equivalent

	low	mid	high	adv	ns
Ungram	2.89598	2.81667	3.40741	2.80157	3.42857
Gram	2.83103	2.45345	2.81481	3.08157	3.28571

FIGURE 7.8: Mean Ratings for 'That-trace effects' and its Grammatical Equivalent



1.6 Effect of Version

It will be recalled that there are two orders of presentation, version one, in which the rating task was presented first and version two, in which the rating task was presented last. The overall means for ungrammatical extraction obtained from subjects who performed version two were higher than the means obtained from subjects who performed version one. However, since there were no significant interactions between stage and version and the developmental pattern which was obtained from both versions was similar, we collapsed the effect of version in considering ungrammatical extraction from relative clauses, adjuncts, wh-islands and complex noun phrases.

Tukey tests which explored the interaction of stage and version for 'that-trace effects' and its grammatical equivalent found that the means at the high level in version one (2.4259) is significantly lower than the means obtained at the same level in version two (3.7963) with a difference of 1.3704. Also, the means obtained at the advanced level in version one (1.9046) is significantly lower than the means obtained at the same level in version two (4.0200) with a difference of 2.1154. Subjects who performed version one of the tasks showed a decrease in the acceptance of 'that-trace effects' with continued exposure to the L2 while no significant differences were found among learners who performed version two of the task.

In comparing the means obtained from strong UG violations (extraction from DP and CP subjects) and weak UG violations ('that-trace effects') in version one and two, we found that for strong violations, the means at the high level are significantly lower in version one than two, with a significant difference of 1.0485. For weak violations, the means at the high and advanced level are also lower in version one than version two, with differences of 2.1481 and 2.2000.

1.7 Summary of Responses to Ungrammatical Extraction

(a) With increased exposure to the L2, there was decreasing acceptability of ungrammatical extraction from relative clauses, adjuncts, wh-islands and complex constructions which was in conformity with prediction. Generally, low and mid-level subjects rated these sentences significantly higher than subjects at the high, advanced and native speaker levels.

(b) Differential responses to Subjacency violations (object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases) were clearly seen at the mid and high levels, in conformity with prediction.

i) Object extraction from relative clauses was rejected significantly more strongly than object extraction from complex noun phrases, in conformity with the prediction that strong Subjacency violations would be rejected more firmly than weak Subjacency violations

ii) Object extraction from wh-islands was rated significantly lower than object extraction from complex noun phrases supporting the prediction that the less weak of two weak violations would be rejected more markedly than the weaker violation.

(c) Differential responses to ungrammatical subject extraction (which violates two UG principles) and ungrammatical object extraction (which violates one UG principle) from the same clause was construction-specific.

(i) No significant differences were found between subject and object extraction from relative clauses, contrary to the prediction that learners who have begun the acquisitional process would reject subject extraction more strongly than object extraction.

(ii) Subject extraction from adjuncts was rejected more determinately than object extraction from adjuncts at the mid level, in conformity with the prediction that learners who have begun the acquisitional process would favour violations of one UG principle over violations of two UG principles.

(iii) No significant differences were found between subject and object extraction from wh-islands, contrary to the prediction that learners who have begun the acquisitional process would prefer violations of one UG principle to violations of two UG principles.

(iv) Learners at all levels and native speakers rejected subject extraction from complex noun phrases significantly more clearly than object extraction from the same clause. This is contrary to the prediction that beginning learners, advanced learners and native speakers would not discriminate between violations of one UG principle and violations of two UG principles. On the other hand, it is in conformity with the prediction that intermediate learners who have begun the acquisitional process would favour violations of one UG principle over violations of two UG principles.

(d) Subjects at the high, advanced and native speaker levels rated subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases as significantly more acceptable than those at the low and mid levels, in conformity with prediction.

(e) Subjects at the high, advanced and native speaker levels also gave lower acceptability ratings to object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases than those at the low and mid levels, in conformity with prediction.

(f) Low-, mid- and high-level subjects did not reject strong UG violations (extraction from CP and DP subjects) more decisively than weak UG violations ('that-trace effects'). However, advanced learners and native speakers were able to do so. These results are in conformity with prediction.

(g) No significant differences were found between 'that-trace effects' and its grammatical equivalent among subjects at all levels, in conformity with prediction.

(h) Advanced level learners did not differ from native speakers in the judgement of all of the above forms of ungrammatical extraction, in conformity with prediction.

(i) Generally, the means obtained from version one was lower than the means obtained from version two. In addition, the following significant interactions are noted below:-

(i) For 'that-trace effects', the means obtained from high and advanced level subjects who did version one of the task are significantly lower than those who did version two of the task.

(ii) Subjects who performed version one of the tasks showed a decrease in the acceptance of 'that-trace effects' with continued exposure to the L2. No significant differences were found among learners who performed version two of the task.

(iii) High-level subjects who performed version one of the tasks rated ungrammatical extraction from CP and DP subjects significantly lower than subjects at the same level who performed version two of the tasks.

2 Grammatical Extraction

With regard to grammatical extraction, our general hypothesis was that beginning learners may find some forms of grammatical extraction more acceptable than others due to L1 constraints. Specifically, we predicted that in simple sentences, beginning learners would rate subject extraction significantly higher than object extraction. We also predicted that beginning learners would rate subject extraction significantly higher than extraction from DP Objects.

The pattern of acceptability for extraction in embedded sentences is complicated by the influence of processing constraints against subject extraction. We predicted that unlike native speakers, beginning learners would not rate embedded object extraction significantly higher than embedded subject extraction since the L1 influence against object extraction would counteract the processing constraint on subject extraction. However, we predicted that beginning learners would rate subject and object extraction in embedded sentences significantly higher than extraction from DP Objects due to L1

constraints against the latter.

Considering the acceptability of grammatical extraction in simple and embedded sentences across subject levels, we predicted that since there were no L1 constraints against subject extraction, beginning learners would not differ from advanced learners in their acceptance of subject extraction in simple and embedded sentences. However, we predicted that due to the L1 constraints against object extraction and extraction from DP Objects, beginning learners would find these sentences less acceptable than advanced learners.

On the basis of the learnability principle of cumulative development, our last general hypothesis was formulated with respect to the acceptability of the same extraction-type in simple and embedded sentences: we predicted that beginning learners would find the same extraction-type more acceptable in simple sentences than in embedded sentences. Specifically, we predicted that beginning learners would rate subject and object extraction and extraction from DP Objects in simple sentences significantly higher than the same extraction-types in embedded sentences.

The null hypotheses for beginning learners with respect to extraction from grammatical sentences are that they:-

(a) Would not rate subject extraction significantly higher than object extraction in simple sentences

(b) Would not give significantly higher ratings to subject extraction than extraction from DP Objects in simple sentences

(c) Would find embedded object extraction significantly more acceptable than embedded subject extraction

(d) Would not rate subject and object extraction significantly higher than extraction from DP Objects in embedded sentences

(e) Would not find subject extraction in simple sentences significantly more acceptable than subject extraction in embedded sentences

(f) Would not give object extraction in simple sentences significantly higher ratings than object extraction in embedded sentences

(g) Would not rate extraction from DP Objects in simple sentences significantly higher than extraction from DP Objects in embedded sentences

Comparing the acceptability of grammatical extraction in simple and embedded sentences across subject levels, our null hypotheses are that:-

(a) beginning learners would rate subject extraction significantly lower than advanced learners

(b) beginning learners would not rate object extraction significantly lower than advanced learners

(c) beginning learners would not rate extraction from DP Objects significantly lower than advanced learners

With continued exposure to the L2, our general hypothesis was that advanced learners would overcome L1 influences. Thus, one specific prediction for advanced learners and native speakers was that they would not be influenced by the L1 constraint against object extraction in simple sentences. We also predicted that they would not be influenced by the L1 constraint against extraction from DP objects in simple sentences. In embedded sentences too, we predicted that advanced learners would overcome the L1 constraint against object extraction. Due to the processing constraint against subject extraction, we predicted that advanced level learners and native speakers would rate embedded object extraction significantly higher than embedded subject extraction. With respect to the acceptability of the same extraction-type in simple and embedded sentences, we predicted that, assuming that advanced level learners would have acquired long distance movement, they would find extraction in embedded sentences as acceptable as the same extraction-type in simple sentences. Specifically, we predicted that they would not rate subject and object extraction and extraction from DP Objects in simple sentences more highly than subject and object extraction and extraction from DP Objects in embedded sentences. We also predicted that advanced level learners would not differ from native speakers in their acceptance of grammatical wh-extraction.

The null hypotheses for advanced learners with respect to extraction from grammatical sentences are that they :-

(a) Would rate subject extraction significantly higher than object extraction in simple sentences

(b) Would find subject extraction as significantly more acceptable than extraction from DP Objects in simple sentences

(c) Would not give object extraction significantly higher ratings than subject extraction in embedded sentences

(d) Would find subject and object extraction significantly more acceptable than extraction from DP Objects in embedded sentences

(e) Would rate subject extraction in simple sentences significantly higher than subject extraction in embedded sentences

(f) Would give object extraction in simple sentences significantly higher ratings than object extraction in embedded sentences

(g) Would rate extraction from DP Objects in simple sentences significantly higher than extraction from DP Objects in embedded sentences

(h) Would give grammatical forms of wh-extraction significantly lower ratings than native speakers

In order to compare the developmental pattern of responses for subject extraction, object extraction and extraction from DP Objects in simple sentences with the same extraction-types in embedded sentences, a four-way repeated measures ANOVA was run (stage x version x construction-type x extraction-type). Since the interaction between construction-type, extraction-type and stage proved to be significant ($F(8, 472) = 3.36$, $p < 0.0001$), two three-way ANOVAs were run on:-

(a) Subject and object extraction and extraction from DP Objects in simple sentences

(b) Subject and object extraction and extraction from DP Objects in embedded sentences

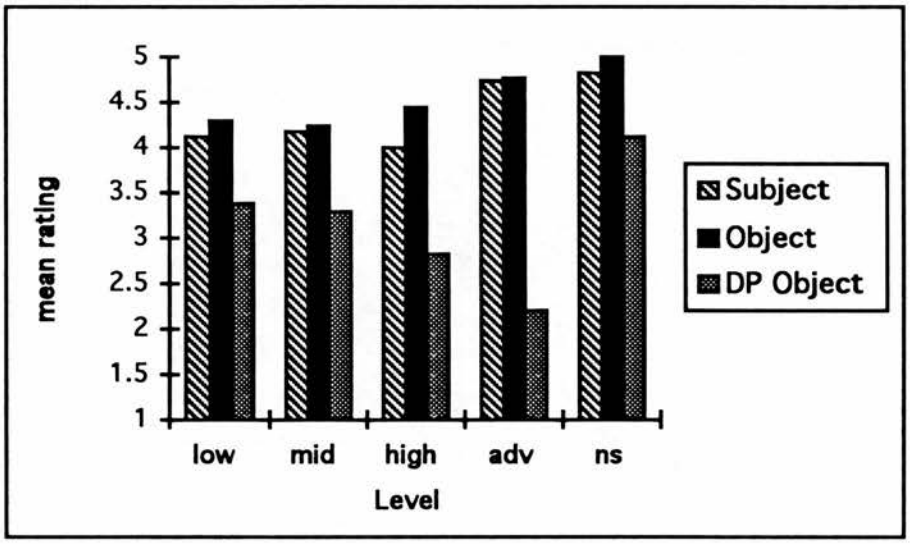
2.1 Extraction in Simple Sentences

The ANOVA on simple constructions revealed that the main effect of extraction-type ($F(2, 472) = 162.32$ $p < 0.0001$) is significant. The interactions of extraction-type and stage ($F(8, 472) = 12.80$, $p < 0.0001$), and extraction-type, stage and version ($F(8, 472) = 4.76$, $p < 0.0001$) are also significant. In order to examine the interaction between extraction-type and stage, Tukey tests were run at the critical value of $q = 4.80$ on the means reported in Table 7.6.

TABLE 7.6: Mean Ratings obtained for Extraction in Simple Sentences

	low	mid	high	adv	ns
Subject	4.10000	4.16358	4.00000	4.73529	4.83333
Object	4.28241	4.23304	4.42806	4.76268	5.00000
DP Object	3.37500	3.28333	2.81481	2.18627	4.11905

FIGURE 7.9: Mean Ratings obtained for Extraction in Simple Sentences



This revealed that the means obtained for both subject and object extraction at each level are significantly higher than extraction from DP Objects. The higher acceptability of subject and object extraction than extraction from DP Objects in simple sentences can also be seen in the graph in Figure 7.9. The significant differences in the means between subject extraction and extraction from DP Objects at the low, mid, high, advanced and native speaker levels are 0.7250, 0.8802, 1.1852, 2.5490 and 0.7143, respectively. Object extraction was also rated significantly higher than extraction from DP Objects at the low, mid, high, advanced and native speaker levels with differences of 0.9074, 0.9497, 1.6133, 2.5764 and 0.8809, respectively. This supports the prediction that beginning learners would find subject and object extraction in simple sentences more acceptable than extraction from DP Objects but is contrary to the prediction that with continued exposure to the L2, they would be able to overcome

these L1 constraints. It is also contrary to the prediction that native speakers would find these grammatical sentences equally acceptable. Comparing the acceptability of subject and object extraction, the absence of any significant differences between the two extraction-types at any of the levels of learners is contrary to the prediction that beginning learners would be influenced by the L1 constraint against object extraction.

2.2 Extraction in Embedded Sentences

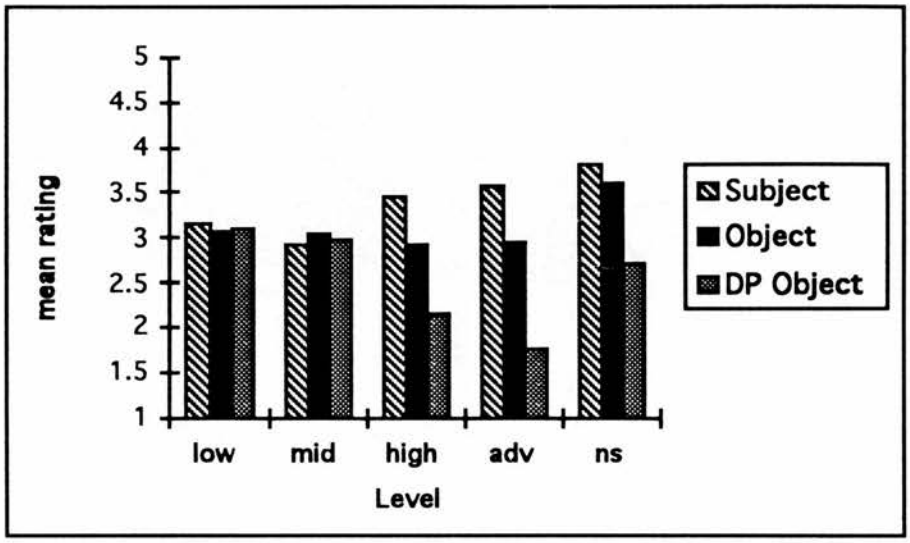
A three-way ANOVA which was run on the responses for extraction in embedded sentences revealed that the main effect of extraction-type is significant ($F(2, 472) = 45.72$, $p < 0.0001$). It is mediated by stage ($F(8, 472) = 10.94$, $p < 0.0001$) and by stage and version ($F(8, 472) = 2.76$, $p = 0.0055$). Tukey tests were run at $q = 4.80$ to explore the interaction between extraction-type and stage on the means reported in Table 7.7.

TABLE 7.7: Mean Ratings for Extraction-type in Embedded Sentences

	low	mid	high	adv	ns
Subject	3.15000	2.91451	3.45370	3.55882	3.80952
Object	3.06697	3.03086	2.90741	2.96078	3.59524
DP Object	3.08333	2.96667	2.14815	1.74851	2.71429

No significant differences were found between extraction-types in embedded sentences at the low and mid levels. As the graph in Figure 7.10 illustrates, at the high, advanced and native speaker levels, subjects rated subject extraction significantly higher than extraction from DP Objects with differences of 1.3056, 1.8103 and 1.0952, respectively. Object extraction was also rated significantly higher than extraction from DP Objects at the high, advanced and native speaker levels with differences of 0.7593, 1.2123 and 0.9658, respectively. These findings are contrary to the prediction that beginning learners would be constrained by L1 influences against extraction from DP Objects. They are also contrary to the prediction that learners at higher levels of proficiency would not be influenced by these constraints.

FIGURE 7.10: Mean Ratings for Extraction-type in Embedded Sentences



There are no significant differences in the rating of embedded subject and object extraction among learners or native speakers. This is contrary to the prediction that advanced-level subjects and native speakers would be influenced by processing constraints into rating embedded object extraction more highly than embedded subject extraction. The findings are in conformity with the prediction that among beginning learners, the L1 constraint against embedded object extraction would counteract the processing constraint against embedded subject extraction so that they do not discriminate between embedded subject and object extraction.

2.3 Extraction-types

In order to compare the acceptability of each of the three extraction-types in simple sentences and embedded sentences among learners at different levels of proficiency, three 3-way repeated measures ANOVAs were run on:-

(a) Subject extraction in simple and embedded constructions

(b) Object extraction in simple and embedded constructions.

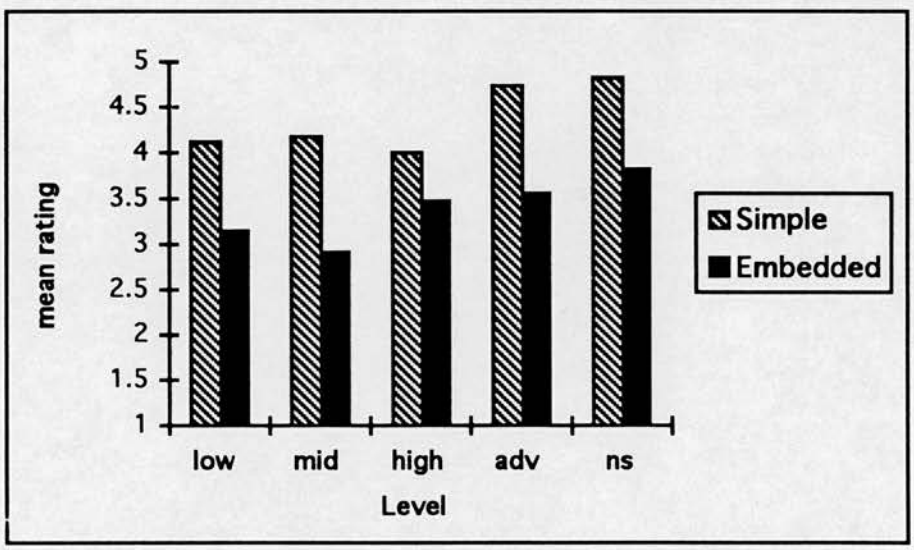
(c) Extraction from DP Objects in simple and embedded constructions

The factors tested were stage, version and construction-type.

2.3.1 Subject Extraction in Simple and Embedded Sentences

The ANOVA on subject extraction revealed the significant effects of stage ($F(4, 236) = 10.21$, $p < 0.0001$), version ($F(1, 236) = 74.06$, $p < 0.0001$) and construction-type ($F(1, 236) = 141.26$, $p < 0.0001$). The significant interactions are stage and version ($F(4, 236) = 5.75$, $p = 0.0002$), construction-type and stage ($F(4, 236) = 2.82$, $p = 0.0260$) and construction-type, stage and version ($F(4, 236) = 3.06$, $p = 0.0176$). Since the developmental patterns for subject extraction in simple and embedded sentences obtained from subjects who performed both versions of the task was similar, the results obtained from both versions of the task were collapsed. To examine the interaction between construction-type and stage, Tukey tests were run at the critical value of $q = 3.86$ on the means for subject extraction in simple and embedded sentences.

FIGURE 7.11: Mean Ratings for Subject Extraction in Simple and Embedded Sentences



The graph in Figure 7.11 shows that the means for subject extraction in simple sentences is significantly higher than the means for embedded sentences at the low, mid, advanced and native speaker levels, with differences of 0.9500, 1.2491, 1.1765 and 1.0238, respectively. This confirms the prediction that learners would find subject extraction in simple sentences more acceptable than in embedded sentences. However, the prediction that there would be no significant difference in the means obtained from advanced learners and native speakers for subject extraction in simple and embedded

sentences is not supported. No significant differences in the acceptability of grammatical subject extraction were found among the four levels of learners, in conformity with prediction.

2.3.2 Object Extraction in Simple and Embedded Sentences

A three-way ANOVA which was run on the responses for object extraction in simple and embedded clauses found the following significant main effects:- stage ($F(4, 236) = 4.44$, $p = 0.0018$), version ($F(1, 236) = 8.57$, $p = 0.0037$) and construction-type ($F(1, 236) = 288.34$, $p < 0.0001$). Significant interactions are between stage and version ($F(4, 236) = 6.17$, $p = 0.0001$), between construction-type and version ($F(1, 236) = 14.37$, $p = 0.0002$), and between construction-type and stage and version ($F(4, 236) = 4.23$, $p = 0.0025$).

TABLE 7.8: Mean ratings for Object Extraction in Version One and Two

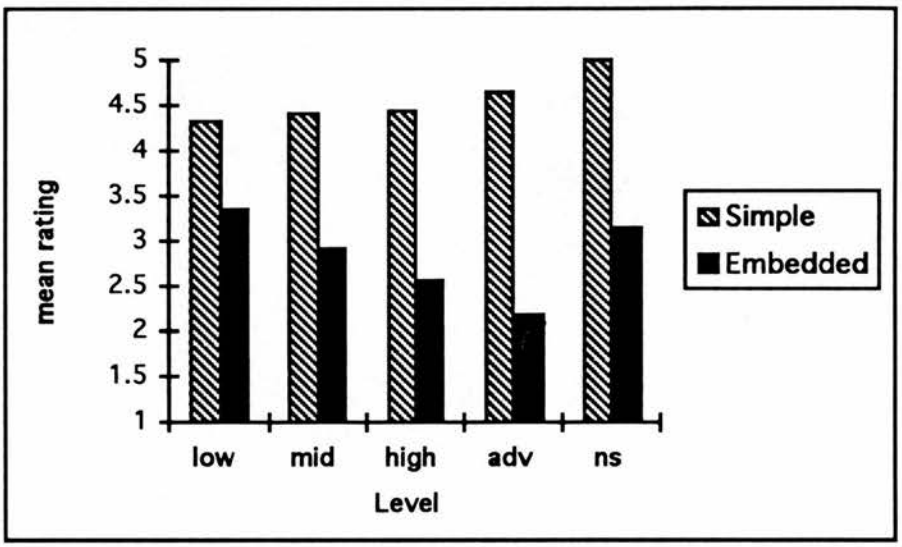
	version one		version two	
	simple	embedded	simple	embedded
low	4.31481	3.33395	4.25000	2.80000
mid	4.41667	2.89506	4.04941	3.16667
high	4.42593	2.55556	4.43020	3.25926
adv	4.63231	2.17308	4.89826	3.78000
ns	5.00000	3.13636	5.00000	4.10000

In order to examine the interaction between construction-type and stage and version, Tukey tests were run at a critical value of $q = 5.01$ on the means in Table 7.8. The tests found that learners from the four levels of proficiency and the control group rated object extraction in simple sentences significantly higher than object extraction in embedded sentences in version one and two.

In version one, the differences in the means between object extraction from simple and embedded sentences at the low, mid, high, advanced and native speaker levels were 0.9809, 1.5216, 1.8704, 2.4592 and 1.8636, respectively. The differences in the means at the low, mid, high, advanced and native speaker level in version two were

1.4500, 0.9506, 1.1709, 1.1183 and 0.9000, respectively.

FIGURE 7.12: Mean Ratings for Object Extraction in Simple and Embedded Sentences in Version One

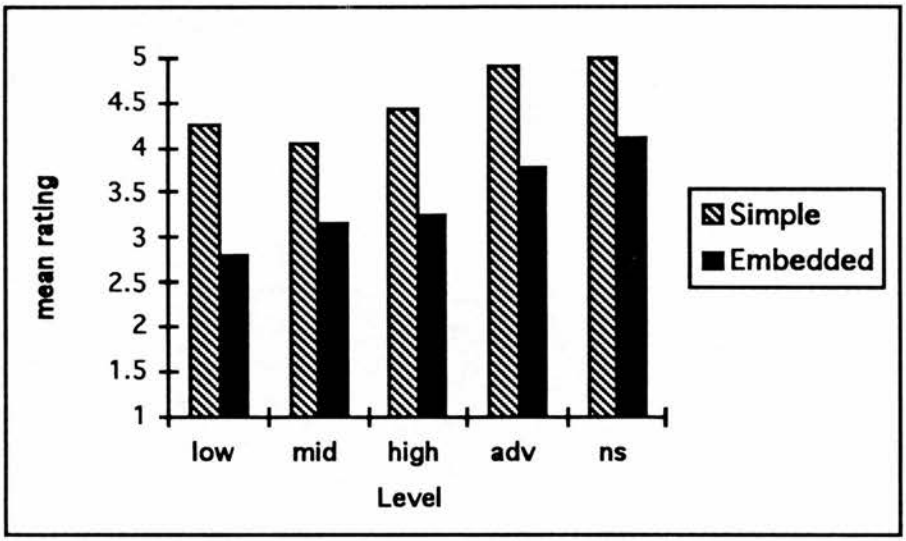


Comparing responses for object extraction in simple sentences across levels in version one, no significant differences were found in the means between the four levels of learners, contrary to prediction. Comparing responses for object extraction in embedded sentences across levels, the graph in Figure 7.12 shows a decrease in acceptability with increased exposure to the L2. Statistically, the means obtained at the low level is significantly higher than that obtained at the advanced level with a difference of 1.1609. This is contrary to the prediction that with increased exposure to the L2, learners would find embedded object extraction more acceptable than at the initial stages. The means obtained at the advanced level in version one is significantly lower than that obtained at the native speaker level in the same version, with a difference of 0.9633.

In version two, there are no significant differences for object extraction in simple sentences across levels, which is contrary to prediction. For embedded object extraction, the graph in Figure 7.13 shows a developmental trend towards increasing acceptance of embedded object extraction. This is confirmed statistically: the means obtained at the low level is significantly lower than that obtained at the advanced level, with a difference of 0.9800. These results support the prediction that with continued

exposure to the L2, learners would find embedded object extraction more acceptable than in the initial stages of acquiring the L2.

FIGURE 7.13: Mean Ratings for Object Extraction in Simple and Embedded Sentences in Version Two



The developmental pattern for embedded object extraction in version two presents a contrast with that obtained in version one which was not predicted. Comparing the results obtained in version one with those obtained in version two, the means obtained at the advanced and native speaker levels in version one are significantly lower than those at the same levels in version two, with differences of 1.6069 and 0.9636, respectively.

2.3.3 Extraction from DP Objects in Simple and Embedded Sentences

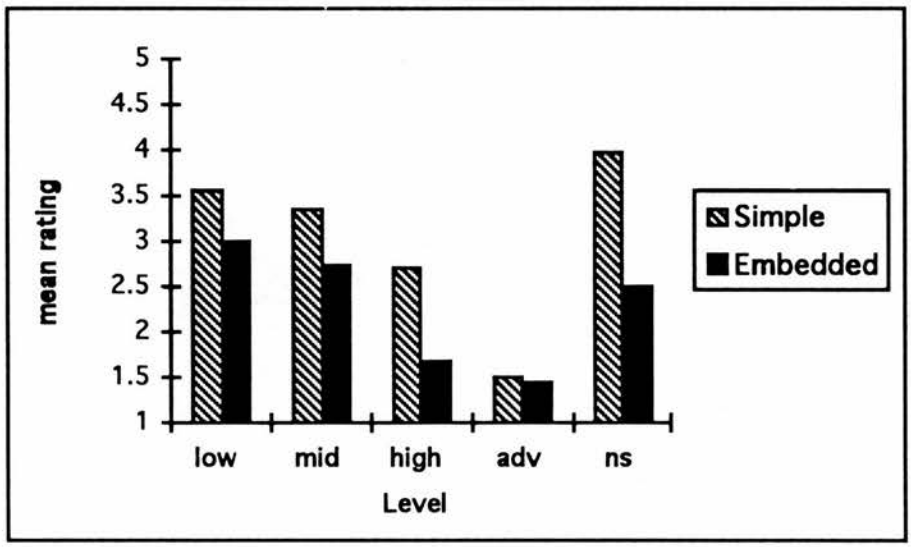
A three-way ANOVA run on the responses to extraction from DP Objects revealed the significant main effects of stage ($F(4, 236) = 23.17$, $p < 0.0001$), version ($F(1, 236) = 13.50$, $p = 0.0003$) and construction-type ($F(1, 236) = 61.74$, $p = 0.0000$). The significant interactions are stage and version ($F(4, 236) = 3.57$, $p = 0.0075$), construction-type and stage ($F(4, 236) = 4.40$, $p = 0.0019$), construction-type and version ($F(1, 236) = 2.36$, $p = 0.1262$) and construction-type and stage and version ($F(4, 236) = 3.74$, $p = 0.0057$). In order to examine the interaction of construction-type and stage, a Tukey test was run at the critical value of $q = 4.47$ on the means for

DP objects in simple and embedded sentences, which are reported in Table 7.9.

TABLE 7.9: Mean Ratings for Extraction from DP Objects in Version One and Two

	version one		version two	
	simple	embedded	simple	embedded
low	3.55000	2.98333	3.20000	3.18333
mid	3.35000	2.73333	3.21667	3.20000
high	2.70370	1.66667	2.92593	2.62963
adv	1.48077	1.42308	2.92000	2.08696
ns	3.95455	2.50000	4.30000	2.95000

FIGURE 7.14: Mean Ratings for Extraction from DP Objects in Simple and Embedded Sentences in Version One

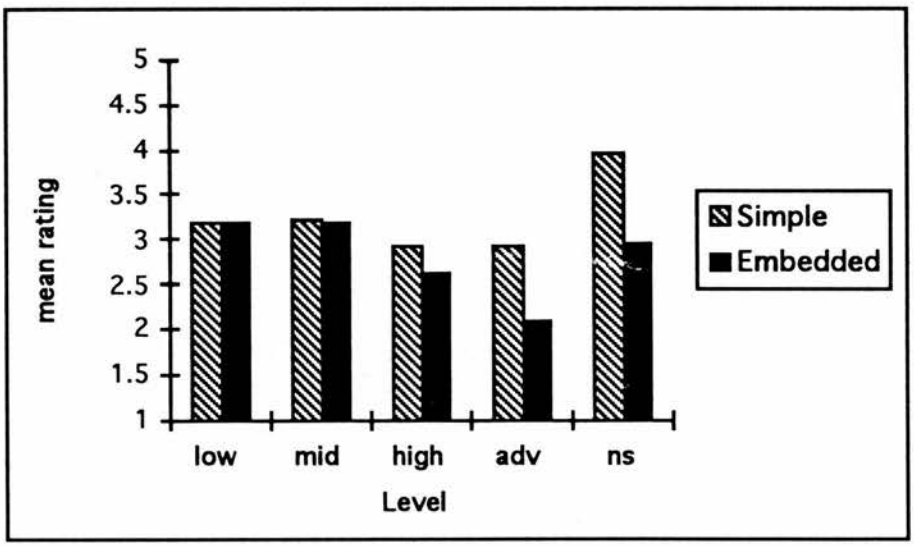


The graph in Figure 7.14 shows a decreasing acceptance of extraction from DP Objects in simple and embedded sentences with increased exposure to the L2 among version one subjects. The means for extraction from DP Objects in simple sentences obtained from the low, mid and the high levels are significantly higher than the means at the advanced level, with differences of 2.0692, 1.8692 and 1.2229, respectively. This is contrary to the prediction that with increased exposure to the L2, learners would find these sentences more acceptable. The mean obtained at the advanced level is

significantly lower than that obtained at the native speaker level with a significant difference of 2.4738, contrary to prediction.

For extraction from DP Objects in embedded sentences, the means obtained from the low-level subjects who took version one are significantly higher than the means of high and advanced-level subjects who took the same version with differences of 1.3167 and 1.5603, respectively. The means obtained from the mid level in version one is also significantly higher than the means obtained at the high and advanced levels with differences of 1.0667 and 1.3103, respectively. This pattern of decreasing acceptability with increased exposure to the L2 is clearly seen in the graph in Figure 7.14. These findings are contrary to the prediction that with continued exposure to the L2, subjects would find extraction from DP Objects in embedded sentences more acceptable. Subjects at the advanced level rated extraction from DP Objects in embedded sentences significantly lower than native speakers, with a difference of 1.0769. This too is contrary to prediction.

FIGURE 7.15: Mean Ratings for Extraction from DP Objects in Simple and Embedded Sentences in Version Two



In contrast to version one, no significant differences were found among learners for extraction from DP Objects in simple sentences in version two. The means obtained for extraction from DP Objects in simple sentences at the advanced level is significantly lower than that at the native speaker level with a difference of 1.3800. These findings

do not support the prediction that with continued exposure to the L2, learners would find these sentences increasingly acceptable.

For embedded sentences, the means obtained at the low and mid levels are significantly higher than at the advanced level with differences of 1.0964 and 1.1130, respectively. This is clearly seen in the graph in Figure 7.15. The means obtained at the advanced level is significantly lower than the means at the native speaker level with a difference of 0.8630. These results disconfirm the prediction that beginning learners would find extraction from DP Objects in embedded sentences more unacceptable than learners at the later stages of acquiring the L2. The prediction that advanced level learners would find these sentences as acceptable as native speakers is also not borne out by these results.

In both versions, no significant differences were found in the means between extraction from DP Objects in simple and embedded sentences among learners at each of the four levels. This is contrary to the learnability principle of cumulative development which predicts that extraction-type in simple sentences would be more acceptable than the same extraction-type in embedded sentences. In contrast, native speakers who performed version one and two of the tasks rated extraction from DP Objects in simple sentences significantly higher than in embedded sentences, with differences of 1.4546 and 1.3500, respectively.

Finally, we will compare the acceptability of extraction from DP Objects in simple and embedded sentences between subjects who performed version one and two of the rating task. At the advanced level, the means obtained for extraction from simple sentences is significantly lower in version one than two with a difference of 1.4392.

2.4 Summary of Responses to Grammatical Extraction

(a) Subject and object extraction received significantly higher ratings than extraction from DP Objects in simple sentences by learners at all levels. This supports the prediction that learners would be influenced by L1 constraints against extraction from DP Objects but is not in conformity with the prediction that they would be able to overcome them. There were differences in the

relative acceptability of grammatical extraction between native speakers who took the rating task first of all the experimental tasks (henceforth designated as RTF subjects) and those who took the rating task last of all the experimental tasks (henceforth designated as RTL subjects).

(i) The RTF subjects at native speaker level rated subject and object extraction in simple sentences significantly higher than extraction from DP Objects.

(ii) The RTL subjects at native speaker level demonstrated no significant differences in the rating of grammatical sentences.

(b) No significant differences were found between subject and object extraction in simple sentences, contrary to the prediction that beginning learners would be influenced by L1 constraints against the latter.

(c) No significant differences were found between subject and object extraction and extraction from DP Objects in embedded sentences among low and mid level learners. This is contrary to the prediction that beginning learners would be influenced by L1 constraints against object extraction and extraction from DP Objects.

(d) Embedded subject and object extraction was rated significantly higher than extraction from DP Objects in embedded sentences at high, advanced and native speaker levels. The prediction that advanced learners would be able to overcome L1 constraints against extraction from DP Objects is thus not borne out. The prediction that native speakers would find the three grammatical extraction-types involving long-distance movement equally acceptable is also not supported.

(e) No significant differences were found in the acceptability of subject extraction in simple sentences among learners from the four levels of proficiency, in conformity with prediction.

(f) In conformity with prediction, learners from the four levels of proficiency also did not demonstrate significant differences in the acceptability of embedded subject extraction.

(g) No significant differences were found in the acceptability of object extraction in simple sentences among learners from the four levels of proficiency, contrary to the prediction that beginning learners would be influenced by L1 constraints.

(h) For embedded object extraction, different patterns of acceptance for RTF and RTL subjects were observed.

(i) RTF subjects showed a pattern of decreasing acceptance of embedded object extraction with continued exposure to the L2; low level learners rated these sentences significantly higher than advanced level learners.

(ii) RTL subjects showed a pattern of increasing acceptance of embedded object extraction with continued exposure to the L2; low level learners gave these sentences significantly lower ratings than advanced level learners.

The pattern demonstrated by RTL subjects confirms the prediction that with continued exposure to the L2, learners would increasingly accept embedded object extraction.

(i) For extraction from DP Objects in simple sentences, there were differences in the relative acceptability among RTF and RTL subjects.

(i) RTF subjects showed a pattern of decreasing acceptance of extraction from DP Objects: low, mid and high level learners rated these sentences significantly higher than advanced level learners.

ii) Among RTL subjects, there were no significant differences in the acceptability of extraction from DP Objects in simple sentences between learners from the four proficiency levels.

The results obtained from both RTF and RTL subjects do not support the prediction that with continued exposure to the L2, learners would find these sentences increasingly acceptable. Both RTF and RTL advanced level learners rated these sentences significantly lower than native speakers, which is also contrary to prediction.

(j) For extraction from DP Objects in embedded sentences, there was decreasing acceptance with continued exposure to the L2: low and mid level learners rated these sentences significantly higher than high and advanced learners. This applied to both RTF and RTL subjects and is contrary to the predictions that beginning learners would be influenced by L1 constraints and advanced learners would be able to overcome them. At advanced level, both RTF and RTL subjects rated these sentences significantly lower than native speakers. This too is contrary to prediction.

(k) Subject extraction from simple sentences was generally rated lower than embedded subject extraction by learners and native speakers. This supports the prediction for beginning learners but not the prediction for advanced learners and native speakers.

(l) Object extraction from simple sentences was generally rated lower than embedded object extraction by learners and native speakers. This too confirms the prediction for beginning learners but not that for advanced learners and native speakers.

(m) No significant differences were found between extraction from DP Objects in simple sentences and extraction from DP Objects in embedded sentences among learners. Native speakers rated extraction from DP Objects in simple sentences significantly higher than extraction from DP Objects in embedded sentences. These findings disconfirm the prediction that beginning learners

would find extraction from DP Objects in simple sentences more acceptable than extraction from DP Objects in embedded sentences. They also do not support the prediction that advanced level learners and native speakers would find extraction of DP Objects in simple and embedded sentences equally acceptable.

Chapter 8

Ranking Task Results

Introduction

This chapter presents the results of the ranking task. This task aimed to test the ability of learners to discriminate between grammatical and ungrammatical wh-extraction. It also aimed to test the ability of learners to discriminate between sentences which violate one UG principle and sentences which violate two UG principles. Finally, it aimed to test whether learners were influenced by the L1 in their judgement of grammatical sentences.

Friedman two-way analysis of variance were run on the ranks obtained from each subject for the test items. When tests revealed a significance level of less than 0.05, pairwise comparisons were run on the ranks to determine differences in the ranks which are significant. The results of the Friedman tests and the relevant pairwise comparisons are reported in Appendix R and S, respectively.

1 Ungrammatical Extraction from Relative Clauses, Adjuncts, Wh-Islands and Complex Noun Phrases

Assuming that UG principles relevant to wh-movement are only accessible to the L2 learner once they have acquired wh-movement, we predicted that beginning learners who had not acquired wh-movement would not be constrained by UG principles against ungrammatical wh-movement. Thus, our first general hypothesis is that beginning learners would not be able to discriminate between grammatical and ungrammatical forms of wh-extraction. Our four specific hypotheses are that beginning learners would not rank ungrammatical subject and object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases significantly lower than the grammatical equivalents of these extractions. The corresponding null hypotheses are that beginning learners would rank ungrammatical subject and object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases significantly lower than the grammatical equivalents of these extractions.

Turning now to the ability to discriminate between sentences which violate two UG principles and sentences which violate only a single UG principle, recall that ungrammatical subject extraction from the above clauses violates two UG principles, Subjacency and the ECP while ungrammatical object extraction from the same clauses violates only Subjacency. Assuming that beginning learners who have not acquired wh-movement do not have access to UG principles relevant to wh-movement, our second general hypothesis is that low level learners would not be able to discriminate between sentences which violate one UG principle and sentences which violate two UG principles. Specifically, we predict that beginning learners would not rank ungrammatical subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases significantly lower than ungrammatical object extraction from the same clauses. The corresponding null hypotheses are that beginning learners would rank ungrammatical subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases significantly lower than ungrammatical object extraction from the same clauses.

Our third general hypothesis for beginning learners with respect to these sets of constructions deals with the possible influence of the L1 in judging grammatical forms of wh-extraction. Specifically, assuming that L2 learners would be influenced by the L1 constraint against object extraction, we predict that beginning learners would significantly favour grammatical subject extraction to grammatical object extraction. The null hypothesis is that beginning learners would not prefer grammatical subject extraction to grammatical object extraction.

With continued exposure to the L2 and assuming continued accessiblity to UG, we predict that learners would begin to acquire wh-movement in conformity with UG principles. Our general hypothesis for intermediate learners is that they would discriminate between violations of a single UG principle and violations of two UG principles. Specifically, we predict that intermediate learners would significantly prefer ungrammatical object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases to ungrammatical subject extraction from the same clauses. The corresponding null hypotheses are that intermediate learners would not rank ungrammatical object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases significantly higher than ungrammatical subject extraction from

the same clauses.

Assuming that learners who have acquired wh-movement have access to the relevant UG principles, our first general hypothesis for advanced learners and native speakers is that they would be able to discriminate between grammatical and ungrammatical wh-extraction. Specifically, we predict that advanced learners and native speakers would be able to rank ungrammatical extraction from relative clauses, adjuncts, wh-islands and complex noun phrases significantly lower than their grammatical equivalents. The null hypotheses are that advanced learners and native speakers would not be able to rank ungrammatical extraction from relative clauses, adjuncts, wh-islands and complex noun phrases significantly lower than their grammatical equivalents.

Assuming also that advanced learners and native speakers have knowledge of UG violations and that a 'ceiling effect' comes into play, our second general hypothesis for these subjects is that they would not discriminate between violations of a single UG principle and two UG principles. Specifically, we predict that advanced level learners, like native speakers, would not rank ungrammatical object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases significantly higher than ungrammatical subject extraction from the same clauses. The corrresponding null hypotheses are that advanced level learners, like native speakers, would rank ungrammatical object extraction from the above clauses significantly higher than ungrammatical subject extraction from the same clauses.

Finally, assuming that advanced learners have received sufficient evidence of object extraction in the L2, our third general hypothesis is that they would not be influenced by the L1 constraint against object extraction. Specifically, we predict that they would not significantly favour grammatical subject extraction over grammatical object extraction. The null hypothesis is that advanced learners and native speakers would significantly prefer grammatical subject extraction to grammatical object extraction.

1.1 Ungrammatical Extraction from Relative Clauses

The Friedman tests show significant differences in the mean ranks at the low ($F = 21.49$, $df = 3$, $p = 0.0001$), mid ($F = 53.65$, $df = 3$, $p < 0.0001$), high ($F = 88.10$,

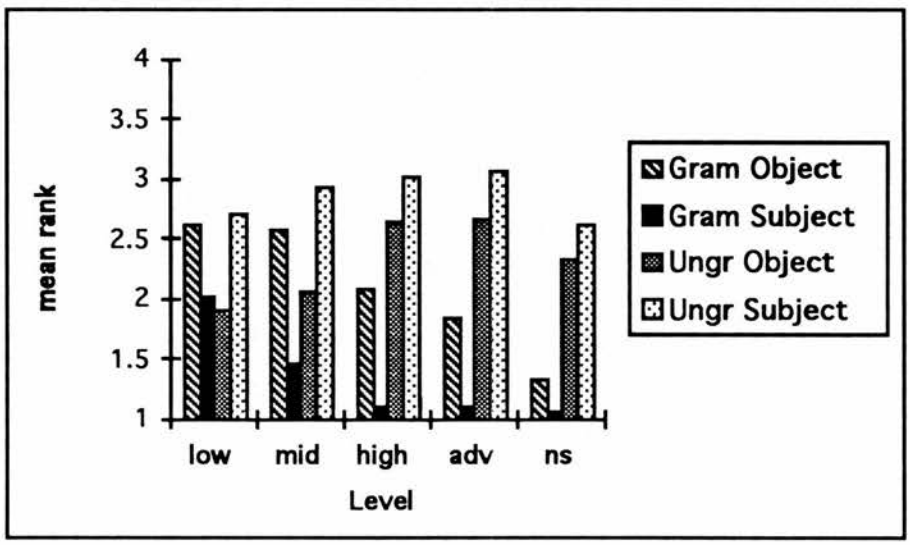
df = 3, $p < 0.0001$), advanced ($F = 100.09$, df = 3, $p < 0.0001$) and native speaker levels ($F = 45.79$, df = 3, $p < 0.0001$).

TABLE 8.1: Mean Ranks for Extraction from Relative Clauses

	low	mid	high	adv	ns
Gram Object	2.61667	2.58333	2.07407	1.84000	1.33333
Gram Subject	2.01667	1.46667	1.11111	1.10000	1.04762
Ungr Object	1.90000	2.06667	2.64815	2.66000	2.33333
Ungr Subject	2.70000	2.93333	3.01852	3.06000	2.61905

(Notes: Gram Object = Grammatical Object Extraction, Gram Subject = Grammatical Subject Extraction, Ungr Object = Ungrammatical Object Extraction, Ungr Subject = Ungrammatical Subject Extraction)

FIGURE 8.1: Mean Ranks for Extraction from Relative Clauses



Pairwise comparisons of the mean ranks reported in Table 8.1 revealed that subjects at all levels significantly prefer grammatical subject extraction to ungrammatical subject extraction. This is clearly seen in the graph in Figure 8.1. Low- and advanced-level subjects and native speakers ranked grammatical object extraction significantly higher than ungrammatical object extraction but there were no significant differences between mid and high level learners. These results are contrary to the prediction that low level learners would not be able to discriminate between grammatical extraction and ungrammatical extraction from relative clauses.

Pairwise comparisons of the mean ranks in Table 8.1 also revealed that low level learners ranked ungrammatical object extraction significantly higher than ungrammatical subject extraction, contrary to the prediction that beginning learners would not be sensitive to the strength with which UG is violated. Mid level learners too significantly favoured ungrammatical object extraction over ungrammatical subject extraction. This can be clearly seen in the graph in Figure 8.1. This is in conformity with the prediction that once learners have begun the acquisitional process, they would prefer sentences which violate a single UG principle over sentences which violate two UG principles. High- and advanced-level subjects and native speakers did not discriminate between the two ungrammatical forms of extraction, in conformity with prediction.

1.2 Ungrammatical Extraction from Adjuncts

The Friedman test run on the responses for the first set of lexicalizations shows that the difference in the mean ranks are significant at the low ($F = 48.89$, $df = 3$, $p < 0.0001$), mid ($F = 71.64$, $df = 3$, $p < 0.0001$), high ($F = 124.05$, $df = 3$, $p < 0.0001$), advanced ($F = 122.76$, $df = 3$, $p < 0.0001$) and native speaker levels ($F = 32.10$, $df = 2$, $p < 0.0001$).

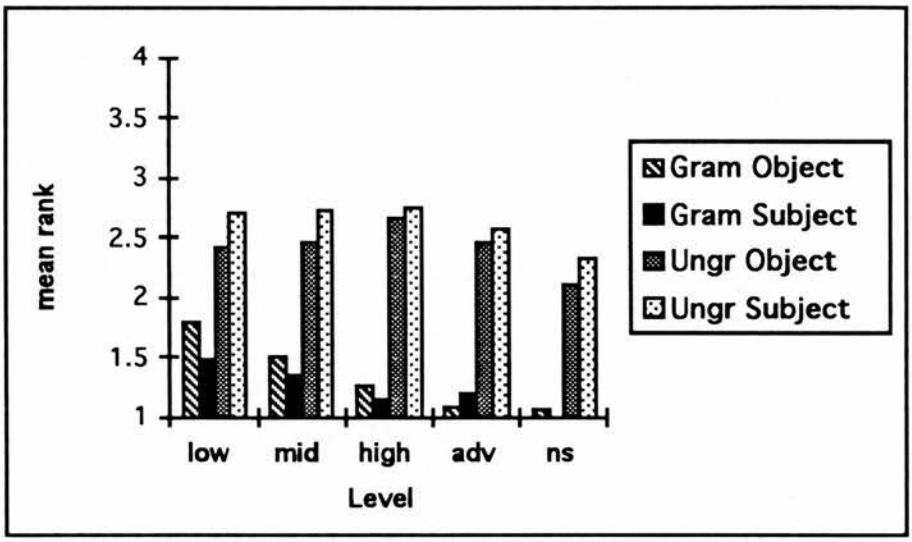
TABLE 8.2: Mean Ranks for Ungrammatical Extraction from Adjuncts (1)

	low	mid	high	adv	ns
Gram Object	1.78333	1.50000	1.25926	1.07843	1.04762
Gram Subject	1.48333	1.35000	1.14815	1.19608	1.00000
Ungr Object	2.41667	2.45000	2.66667	2.47059	2.09524
Ungr Subject	2.71666	2.73333	2.74074	2.56863	2.33333

Pairwise comparisons of the mean ranks in Table 8.2 reveals that learners at all levels ranked grammatical subject extraction significantly higher than ungrammatical subject extraction. This can also be seen in the graph in Figure 8.2. These findings are contrary to the prediction that beginning learners would not be able to discriminate between grammatical and ungrammatical subject extraction. In conformity with prediction, low level learners did not discriminate between grammatical and

ungrammatical object extraction. Mid, high, advanced and native speaker subjects ranked grammatical object extraction significantly higher than ungrammatical object extraction, as predicted. This is clearly seen in the graph in Figure 8.2.

FIGURE 8.2: Mean Ranks for Ungrammatical Extraction from Adjuncts (1)



Low level learners did not prefer ungrammatical object extraction to ungrammatical subject extraction, in conformity with the prediction that beginning learners would not be sensitive to the distinction between a sentence which violates a single UG principle (ungrammatical object extraction) and one which violates two UG principles (ungrammatical subject extraction). No significant differences between ungrammatical subject and object extraction were found among mid, high, advanced and native speakers. This is contrary to the prediction that learners who are beginning to acquire wh-movement would discriminate between violations of one and two UG principles but confirms the prediction that learners at higher levels of proficiency would not discriminate between the two violations.

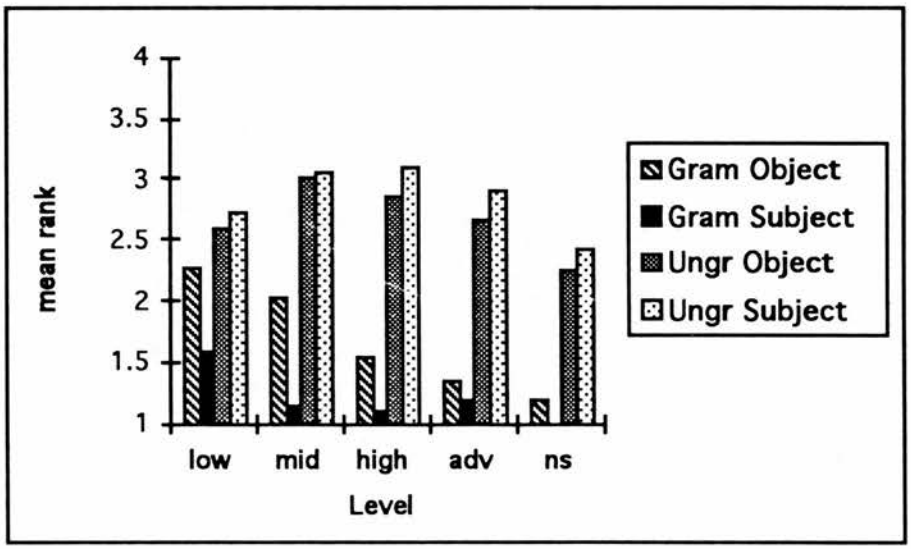
With regard to the possible influence of the L1, the graph in Figure 8.2 shows that learners at all levels did not discriminate between grammatical subject and object extraction. The prediction that beginning learners would be influenced by the L1 constraint against object extraction is thus not supported.

The Friedman test run on the responses for the second set of lexicalizations shows that the difference in the mean ranks are significant at the low ($F = 35.01$, $df = 3$, $p < 0.0001$), mid ($F = 103.46$, $df = 3$, $p < 0.0001$), high ($F = 131.21$, $df = 3$ $p < 0.0001$), advanced ($F = 121.25$, $df = 3$, $p < 0.0001$) and native speaker levels ($F = 28.95$, $df = 2$, $p < 0.0001$).

TABLE 8.3: Mean Ranks for Ungrammatical Extraction from Adjuncts (2)

	low	mid	high	adv	ns
Gram Object	2.26667	2.03333	1.53704	1.34000	1.19048
Gram Subject	1.58334	1.15000	1.09259	1.18000	1.00000
Ungr Object	2.60000	3.01667	2.85185	2.66000	2.23810
Ungr Subject	2.71667	3.05000	3.09259	2.90000	2.42857

FIGURE 8.3: Mean Ranks for Ungrammatical Extraction from Adjuncts (2)



Pairwise comparisons of the mean ranks reported in Table 8.3 show that learners at all levels assigned significantly higher ranks to grammatical subject extraction than ungrammatical subject extraction. This is also graphically represented in Figure 8.3. This is contrary to the prediction that beginning learners would not discriminate between grammatical and ungrammatical subject extraction. As predicted, low level

learners did not discriminate between grammatical and ungrammatical object extraction. Mid, high, advanced and native speaker subjects significantly favoured grammatical object extraction to ungrammatical object extraction, in conformity with prediction.

We turn now to consider the possible influence of the L1. Low and mid level learners gave significantly higher ranks to grammatical subject extraction than grammatical object extraction, confirming the prediction that they would be influenced by the L1 constraint against object extraction. High and advanced learners and native speaker subjects did not rank grammatical subject extraction over grammatical object extraction in conformity with the prediction that learners at the later stages of acquiring the L2 would overcome the L1 constraint against object extraction.

No significant differences were found between ungrammatical subject and object extraction, at any of the levels. Thus, the prediction that learners who had begun acquiring wh-movement would discriminate between a single UG violation and two UG violations is not supported.

1.3 Ungrammatical Extraction from Wh-Islands

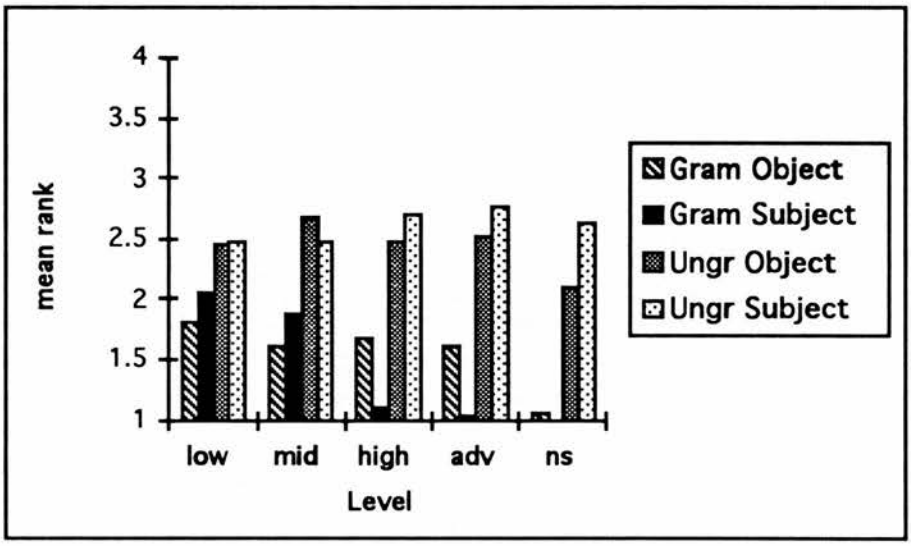
The Friedman test run on the responses for the first set of lexicalizations shows that the difference in the mean ranks are significant at the low ($F = 10.45$, $df = 3$, $p = 0.0151$), mid ($F = 33.08$, $df = 2$, $p < 0.0001$), high ($F = 79.39$, $df = 3$, $p < 0.0001$), advanced ($F = 100.66$, $df = 3$, $p < 0.0001$) and native speaker levels ($F = 34.38$, $df = 2$, $p < 0.0001$).

TABLE 8.4: Mean Ranks for Ungrammatical Extraction from Wh-Islands (1)

	low	mid	high	adv	ns
Gram Object	1.81667	1.61017	1.68519	1.62000	1.04762
Gram Subject	2.05000	1.86441	1.11111	1.04000	1.00000
Ungr Object	2.45000	2.66102	2.48148	2.52000	2.09524
Ungr Subject	2.46667	2.47458	2.70370	2.76000	2.61905

Beginning with the ability to discriminate between grammatical and ungrammatical extraction, pairwise comparison of the mean ranks in Table 8.4 reveals that low and mid level learners did not discriminate between grammatical and ungrammatical subject extraction, in conformity with the prediction for beginning learners. Pairwise comparisons of the mean ranks also reveals that high and advanced level learners and native speakers ranked grammatical subject extraction significantly higher than ungrammatical subject extraction in conformity with the prediction for learners at higher levels of proficiency. This is clearly seen in the graph in Figure 8.4. With respect to object extraction, pairwise comparisons of the mean ranks in Table 8.4 show that learners at all levels and native speakers significantly prefer grammatical extraction to ungrammatical extraction. This is also clearly seen in the graph in Figure 8.4. This is contrary to the prediction that beginning learners would not be able to discriminate between grammatical and ungrammatical object extraction.

FIGURE 8.4: Mean Ranks for Ungrammatical Extraction from Wh-Islands (1)



Learners at all levels of proficiency and native speakers did not discriminate between grammatical subject and object extraction, contrary to the prediction that beginning learners would be constrained by the L1 constraint against object extraction. Subjects from all levels of proficiency also did not favour ungrammatical object extraction to ungrammatical subject extraction contrary to the prediction that learners who have begun the acquisitional process would rank violations of only one UG principle higher

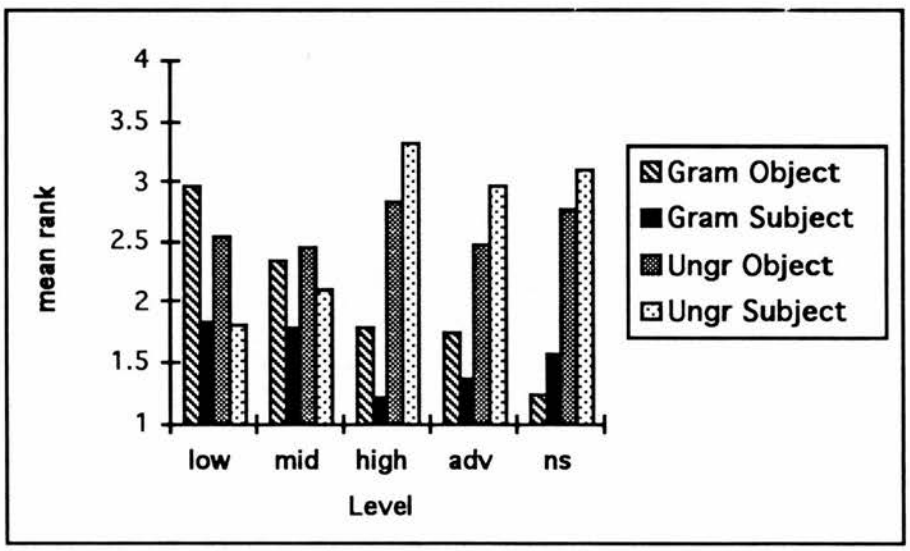
than violations of two UG principles.

The Friedman test run on the means for the second set of lexicalizations show that the difference in the mean ranks are significant at the low ($F = 35.88$, $df = 3$, $p < 0.0001$), mid ($F = 7.78$, $df = 3$, $p = 0.0507$), high ($F = 106.51$, $df = 3$, $p < 0.0001$), advanced ($F = 64.46$, $df = 3$, $p < 0.0001$) and native speaker levels ($F = 44.41$, $df = 3$, $p < 0.0001$). These means are reported in Table 8.5.

TABLE 8.5: Mean Ranks for Ungrammatical Extraction from Wh-Islands (2)

	low	mid	high	adv	ns
Gram Object	2.95000	2.33898	1.77778	1.74000	1.23810
Gram Subject	1.83333	1.79661	1.22222	1.36000	1.57143
Ungr Object	2.53333	2.44068	2.83333	2.48000	2.76190
Ungr Subject	1.80000	2.10170	3.31482	2.96001	3.09524

FIGURE 8.5: Mean Ranks for Ungrammatical Extraction from Wh-Islands (2)



The graph in Figure 8.5 shows that low and mid level learners did not clearly discriminate between grammatical and ungrammatical subject extraction from wh-islands or between grammatical and ungrammatical object extraction from wh-islands.

This is in conformity with the prediction for beginning learners. As predicted, high- and advanced-level subjects and native speakers showed no difficulty in discriminating between grammatical and ungrammatical extraction, as can be seen from the graph in Figure 8.5. Statistically, this is confirmed by pairwise comparison of the mean ranks.

Studying the possible influence of the L1, we found that low level learners gave significantly higher ranks to grammatical subject extraction than grammatical object extraction, supporting the prediction that beginning learners would be influenced by the L1 constraint against object extraction. This is illustrated in the graph in Figure 8.5. Except at the low level, no significant difference was found between grammatical subject and object extraction confirming the prediction that learners at the later stages of acquiring the L2 would overcome the L1 constraint against object extraction. No significant differences were found between ungrammatical subject and object extraction at any of the levels, contrary to the prediction that learners who have begun the acquisitional process would rank a sentence which violates only one UG principle (ungrammatical object extraction) significantly higher than a sentence which violates two UG principles (ungrammatical subject extraction).

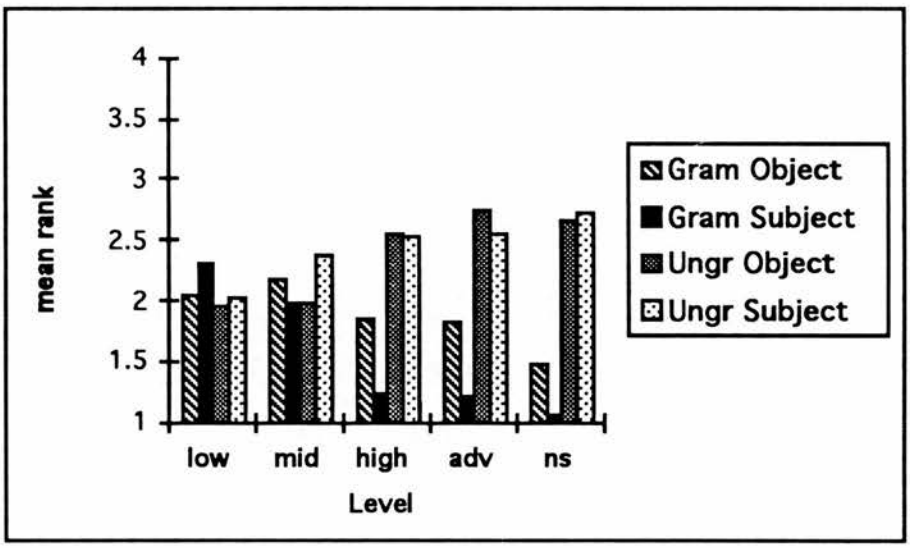
1.4 Ungrammatical Extraction from Complex Noun Phrases

The Friedman test shows that the differences in the mean ranks reported in Table 6 are not significant at the low ($F = 3.32$, $df = 3$, $p = 0.3449$) and mid levels ($F = 3.97$, $df = 3$, $p = 0.2642$). These results support the prediction that since beginning learners are not constrained by UG they would not be able to rank grammatical subject and object extraction above their ungrammatical equivalents. They are not in conformity with the prediction that beginning learners would be influenced by the L1 constraint against object extaction. The differences in the mean ranks are statistically significant at the high ($F = 58.99$ $df = 3$, $p < 0.0001$), advanced ($F = 70.90$, $df = 3$, $p < 0.0001$) and native speaker ($F = 48.16$ $df = 3$, $p < 0.0001$) levels.

TABLE 8.6: Mean Ranks for Ungrammatical Extraction from Complex NPs

	low	mid	high	adv	ns
Gram Object	2.05000	2.18333	1.85185	1.82000	1.47619
Gram Subject	2.31667	1.98333	1.24074	1.20000	1.04762
Ungr Object	1.95000	1.98333	2.55556	2.74000	2.66667
Ungr Subject	2.01667	2.36667	2.53704	2.56000	2.71429

FIGURE 8.6: Mean Ranks for Ungrammatical Extraction from Complex NPs



As can be seen from the graph in Figure 8.6, subjects at the high, advanced and native speaker levels show no difficulty in discriminating between grammatical and ungrammatical subject extraction or between grammatical and ungrammatical object extraction. Statistically, this is confirmed by pairwise comparison of the mean ranks reported in Table 8.6. No significant differences were found between ungrammatical subject and object extraction at any of the levels. This is contrary to the prediction that learners who have begun the acquisitional process would rank ungrammatical object extraction (which violates only one UG principle) over ungrammatical subject extraction (which violates two UG principles).

2 Discrimination between Grammatical and Ungrammatical Wh-extraction

In this section, we concentrate solely on the results obtained for the ability to discriminate between grammatical and ungrammatical wh-extraction. Recall that our first general hypothesis described in Section 1 in this chapter and repeated here for convenience is that beginning learners would not be able to discriminate between grammatical and ungrammatical wh-extraction. Further specific predictions derived from the same general hypothesis are that beginning learners:-

(a) Would not significantly favour the grammatical equivalent of 'that trace effects' to 'that-trace effects'
(b) Would not significantly prefer grammatical subject extraction to ungrammatical extraction from DP Subjects
(c) Would not rank grammatical extraction from DP Objects significantly higher than ungrammatical extraction from DP Subjects
(d) Would not give significantly higher ranks to grammatical extraction from CP Objects significantly than ungrammatical extraction from CP Subjects

The corresponding null hypotheses for the above experimental hypotheses are that beginning learners:-

(a) Would rank the grammatical equivalent of 'that-trace effects' significantly higher than 'that-trace effects'
(b) Would significantly favour grammatical subject extraction to ungrammatical extraction from DP Subjects
(c) Would significantly prefer grammatical extraction from DP Objects to ungrammatical extraction from DP Subjects
(d) Would give significantly higher ranks to grammatical extraction from CP Objects than ungrammatical extraction from CP Subjects

With continued exposure to the L2, we assumed that learners would acquire wh-movement in conformity with UG principles. Thus, our first general hypothesis for advanced level learners in Section 1 of this chapter is that they would be able to discriminate between grammatical and ungrammatical wh-extraction. The specific predictions which are derived from this general hypothesis for advanced learners are that they:-

(a) Would assign significantly higher ranks to the grammatical equivalent of 'that-trace effects' than 'that-trace effects'
(b) Would significantly prefer grammatical subject extraction to ungrammatical extraction from DP Subjects
(c) Would rank grammatical extraction from DP Objects significantly higher than ungrammatical extraction from DP Subjects
(d) Would significantly favour grammatical extraction from CP Objects over ungrammatical extraction from CP Subjects

The corresponding null hypotheses are that advanced learners:-

(a) Would not rank the grammatical equivalent of 'that-trace effects' significantly higher than 'that-trace effects'
(b) Would not assign significantly higher ranks to grammatical subject extraction than ungrammatical extraction from DP Subjects
(c) Would not significantly favour grammatical extraction from DP Objects to ungrammatical extraction from DP Subjects
(d) Would not rank grammatical extraction from CP Objects significantly higher than ungrammatical extraction from CP Subjects

2.1 'That-trace effects' and its grammatical equivalent

Friedman tests run on the results show no significant differences in the mean ranks at the low ($F = 0.27$, $df = 1$, $p = 0.6056$), mid ($F = 0.07$, $df = 1$ $p = 0.7946$) and high levels ($F = 0.07$, $df = 1$, $p = 0.7855$), which are reported in Table 8.7. The inability of low, mid, and high level learners to discriminate between grammatical and ungrammatical extraction can also be clearly seen in the graph in Figure 8.7. The graph also shows that advanced level learners clearly prefer grammatical subject extraction in the absence of a complementizer to ungrammatical subject extraction in its presence; this preference is statistically significant ($F = 12.76$ $df = 1$ $p = 0.004$). Interestingly, all the native speakers ranked the grammatical sentence higher than the ungrammatical sentence. These results are in conformity with the prediction that beginning learners would not be able to discriminate between 'that-trace effects' and its grammatical equivalent but that learners at the later stages of acquiring the L2 as well as native

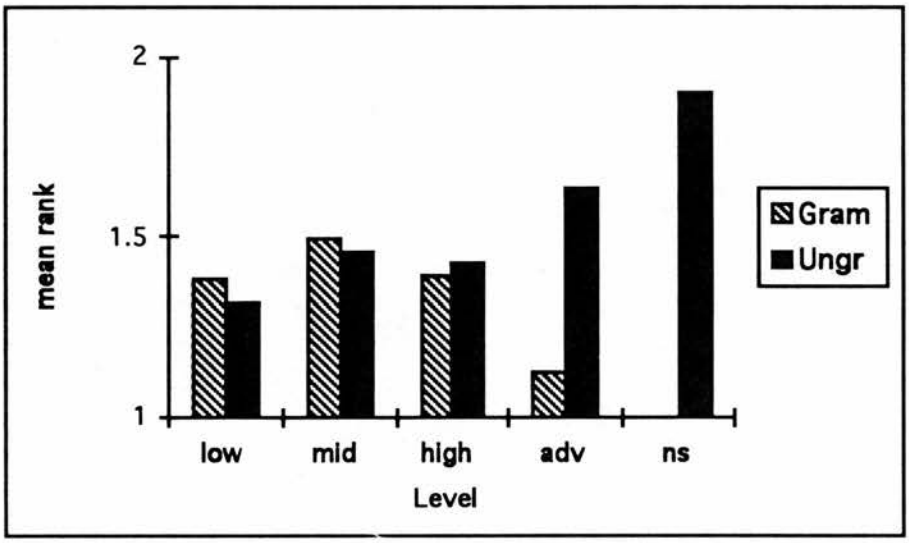
speakers would be able to do so.

TABLE 8.7: Mean Ranks for 'That-trace effects' and its Grammatical Equivalent (1)

	low	mid	high	adv	ns
Gram	1.38333	1.49153	1.38889	1.12245	1.00000
Ungr	1.31667	1.45763	1.42593	1.63265	1.90476

(Notes:- Gram = Grammatical, Ungr = Ungrammatical)

FIGURE 8.7: Mean Ranks for 'That-trace effects' and its Grammatical Equivalent (1)



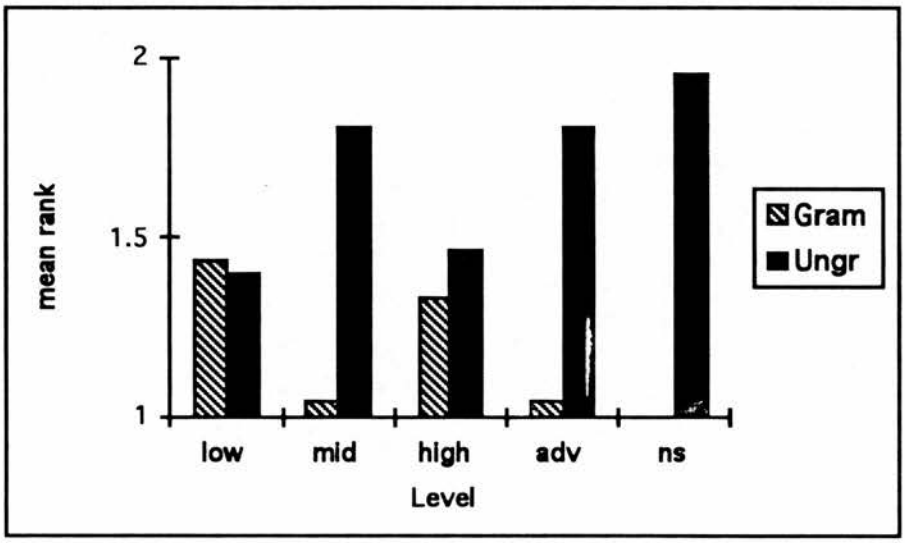
With the second set of lexicalizations, the Friedman test run on the mean ranks in Table 8.8 at the low level showed that the difference between 'that-trace effects' and its grammatical equivalent is not statistically significant ($F = 0.07$, $df = 1$, $p = 0.79633$). The preference for the grammatical sentence over the ungrammatical one is statistically significant among mid-level subjects ($F = 29.92$, $df = 1$, $p < 0.0001$) but not among high-level subjects ($F = 0.91$, $df = 1$, $p = 0.3408$). The higher ranking of the grammatical sentence over its ungrammatical equivalent is highly significant among advanced-level subjects ($F = 29.82$, $df = 1$, $p < 0.0001$). With this pair of lexicalizations too, all the native speakers ranked the grammatical sentence over the ungrammatical equivalent ($F = 0$, $df = 0$, $p = 1.0000$). The graph in Figure 8.8 clearly

shows the preference for grammatical subject extraction over 'that-trace effects' among advanced-level subjects and native speakers, which is in conformity with prediction.

TABLE 8.8: Mean Ranks for 'That-trace effects' and its Grammatical Equivalent (2)

	low	mid	high	adv	ns
Gram	1.43333	1.03922	1.33333	1.03922	1.00000
Ungr	1.40000	1.80392	1.46296	1.80392	1.95238

FIGURE 8.8: Mean Ranks for 'That-trace effects' and its Grammatical Equivalent (2)



2.2 Extraction from DP Subject, from DP Object and of DP Subject

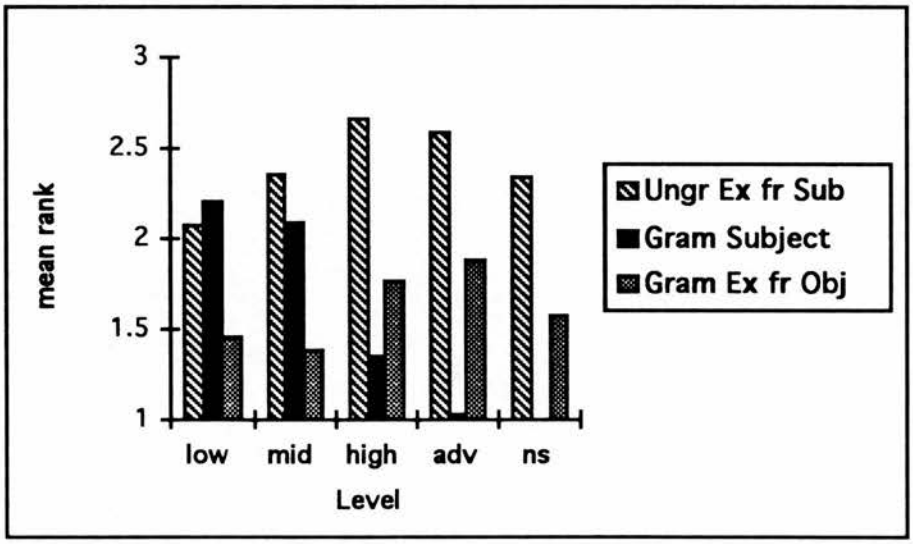
Friedman tests run on the responses revealed that the differences in mean ranks are significant at the low ($F = 19.26$, $df = 2$, $p = 0.0001$), mid ($F = 31.31$, $df = 2$, $p < 0.0001$), high ($F = 53.40$, $df = 2$, $p < 0.0001$), advanced ($F = 77.38$, $df = 2$, $p < 0.0001$) and native speaker ($F = 12.19$, $df = 1$, $p = 0.0005$) levels.

TABLE 8.9: Mean Ranks obtained for Ungrammatical Extraction from DP Subject, Grammatical Extraction from DP Object and Grammatical Extraction of DP Subject

	low	mid	high	adv	ns
Ungr Ex fr Sub	2.06667	2.35000	2.66667	2.58824	2.33333
Gram Subject	2.20000	2.08333	1.35185	1.01961	1.00000
Gram Ex fr Obj	1.45000	1.38333	1.75926	1.88235	1.57143

(Notes:- Ungr Ex fr Sub = Ungrammatical Extraction from Subject, Gram Subject = Grammatical Subject Extraction, Gram Ex fr Obj = Grammatical Extraction from DP Object)

FIGURE 8.9: Mean Ranks obtained for Ungrammatical Extraction from DP Subject, Grammatical Extraction from DP Object and Grammatical Extraction of DP Subject



Pairwise comparisons of the mean ranks reported in Table 8.9 revealed that low level learners do not discriminate between grammatical subject extraction and ungrammatical extraction from DP Subject, supporting the prediction that beginning learners would not favour grammatical wh-extraction over ungrammatical wh-extraction. As can be seen from the graph in Figure 8.9, mid-, high- and advanced level-subjects and native speakers ranked grammatical subject extraction over ungrammatical extraction from DP Subject. Statistically, this is confirmed by pairwise comparison of the mean ranks. This confirms the prediction that with continued exposure to the L2, learners would favour grammatical wh-extraction over

ungrammatical wh-extraction.

Grammatical extraction from DP Objects was ranked significantly higher than ungrammatical extraction from DP Subjects by subjects at all five levels. This can also be clearly seen in the graph in Figure 8.9. This is contrary to the prediction that beginning learners would not be able to discriminate between grammatical and ungrammatical wh-extraction.

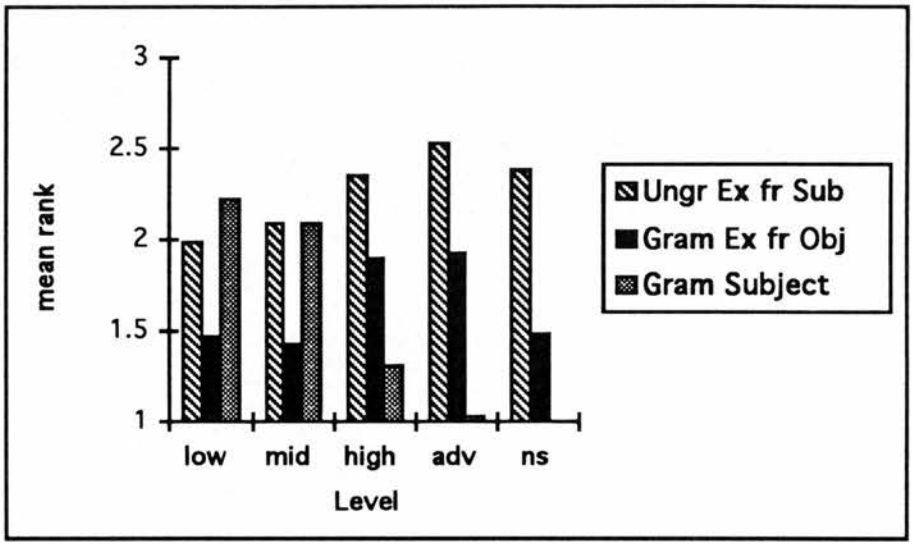
Friedman tests revealed that the differences in mean ranks reported in Table 8.10 are significant for the second set of lexicalizations at the low ($F = 18.01$, $df = 2$, $p = 0.0001$), mid ($F = 19.60$ $df = 2$, $p = 0.0001$), high ($F = 34.56$, $df = 2$, $p < 0.0001$), advanced ($F = 72.91$, $df = 2$, $p < 0.0001$) and native speaker ($F = 17.19$ $df = 1$, $p < 0.0001$) levels.

TABLE 8.10: Mean Ranks obtained for Ungrammatical Extraction from DP Subject, Grammatical Extraction from DP Object and Grammatical Extraction of DP Subject

	low	mid	high	adv	ns
Ungr Ex fr Sub	1.98333	2.08333	2.35185	2.52941	2.38095
Gram Ex fr Obj	1.46666	1.41667	1.88889	1.92157	1.47619
Gram Subject	2.21667	2.08333	1.29630	1.01961	1.00000

Pairwise comparison of the mean ranks showed that low level learners ranked ungrammatical extraction from DP Subject significantly higher than grammatical extraction of DP Subject supporting the prediction that they would not be able to discriminate between grammatical and ungrammatical wh-extraction. Mid-level subjects ranked grammatical and ungrammatical wh-extraction equally which also confirms the prediction that beginning learners would not be able to demonstrate a preference for grammatical wh-extraction over ungrammatical wh-extraction. In conformity with prediction, high, advanced level and native speaker subjects significantly favoured grammatical extraction of DP Subject over ungrammatical extraction from DP Subject. This can be seen clearly in the graph in Figure 8.10.

FIGURE 8.10: Mean Ranks obtained for Ungrammatical Extraction from DP Subject, Grammatical Extraction from DP Object and Grammatical Extraction of DP Subject



Learners at all levels of proficiency ranked grammatical extraction from DP Object significantly higher than ungrammatical extraction from DP Subject, contrary to the prediction for beginning learners. This is clearly illustrated in the graph in Figure 8.10.

2.3 Extraction from CP Subjects and CP Objects

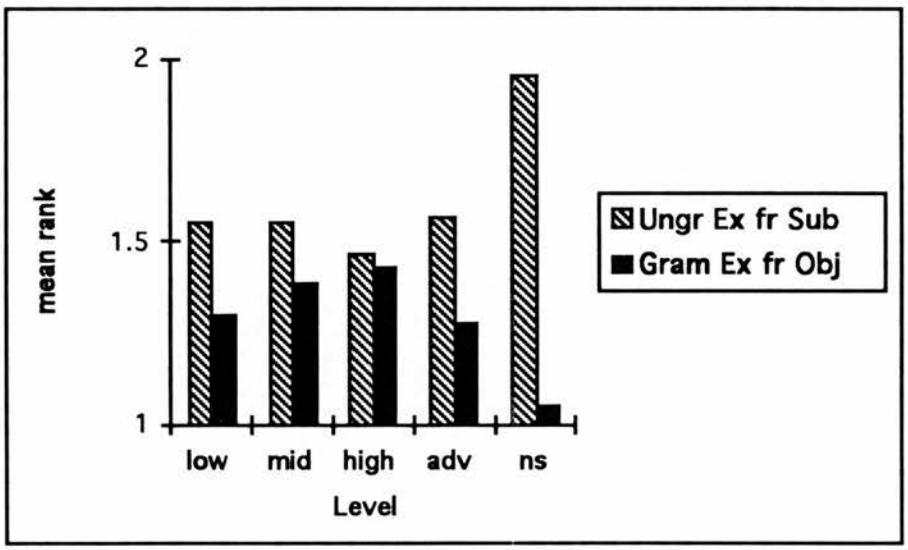
Friedman tests revealed that for the first set of lexicalizations, the differences in the mean ranks are not significant at the low ($F = 3.75$, $df = 1$, $p = 0.0528$), mid ($F = 1.67$, $df = 1$, $p = 0.1967$) and high ($F = 0.07$, $df = 1$, $p = 0.7855$) levels but is significant at the advanced ($F = 4.41$, $df = 1$, $p = 0.0357$) and native speaker ($F = 17.19$, $df = 1$, $p < 0.0001$) levels. As can be seen from the graph in Figure 11, advanced level and native speaker subjects significantly preferred grammatical extraction from CP Objects to ungrammatical extraction from CP Subjects. These results support the prediction that with continued exposure to the L2, learners prefer grammatical extraction to the UG violation.

TABLE 8.11: Mean Ranks obtained for Ungrammatical Extraction from CP Subject and Grammatical Extraction from CP Object (1)

	low	mid	high	adv	ns
Ungr Ex fr Sub	1.55000	1.55000	1.46296	1.56863	1.95238
Gram Ex fr Obj	1.30000	1.38333	1.42596	1.27451	1.04762

(Notes: Ungr Ex fr Sub = Ungrammatical Extraction from CP Subject, Gram Ex fr Obj = Ungrammatical Extraction from CP Object)

FIGURE 8.11: Mean Ranks obtained for Ungrammatical Extraction from CP Subject and Grammatical Extraction from CP Object (1)



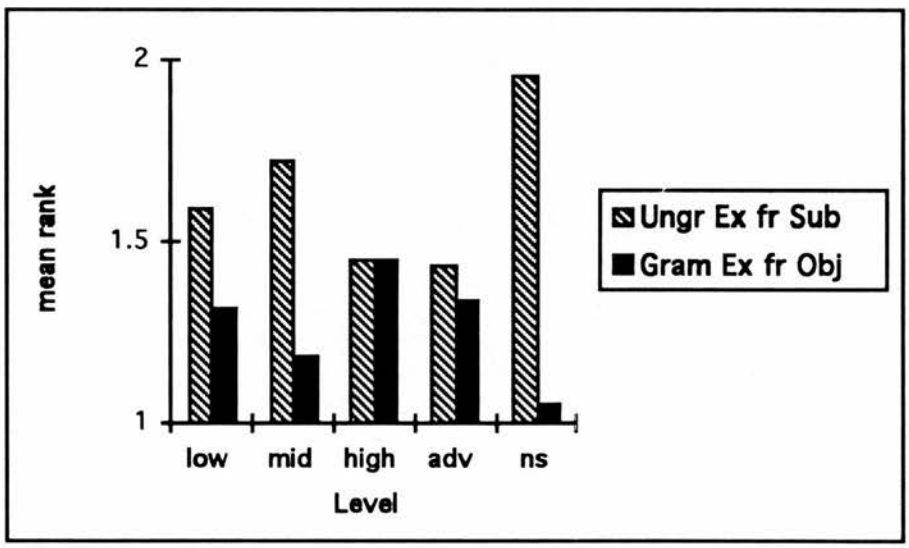
For the second set of lexicalizations,the graph in Figure 8.12 does not reveal a clear developmental trend in the preference for grammatical extraction from CP Object over ungrammatical extraction from CP Subject. This is contrary to the prediction that this preference would increase with continued exposure to the L2. The difference in the mean ranks is not statistically significant at the low level ($F= 5.40$, $df = 1$, $p = 0.201$) but highly significant among mid-level subjects ($F = 17.07$, $df = 1$, $p < 0.0001$). Subjects at the high level assign almost equal ranks to the two sentence-types ($F = 0$ $df = 1$, $p = 1.0000$) while the difference in means is not significant at the advanced level ($F = 0.49$, $df = 1$, $p= 0.4838$). These results present a contrast to the results obtained from native speaker subjects whose preference for the grammatical extraction over the

ungrammatical one is highly significant ($F = 17.19$ $df = 1$, $p < 0.0001$). This difference between advanced-level subjects and native speakers is contrary to prediction.

TABLE 8.12: Mean Ranks obtained for Ungrammatical Extraction from CP Subject and Grammatical Extraction from CP Object (2)

	low	mid	high	adv	ns
Ungr Ex fr Sub	1.58333	1.71667	1.44444	1.43137	1.95238
Gram Ex fr Obj	1.31667	1.18333	1.44445	1.33333	1.04762

FIGURE 8.12: Mean Ranks obtained for Ungrammatical Extraction from CP Subject and Grammatical Extraction from CP Object (2)



3 Influence of the L1

In this section, we consider the possible influence of the L1. The last of the general hypotheses for beginning learners outlined in Section 1 of this chapter and repeated here for convenience is that they would favour some grammatical forms of extraction over other grammatical forms of extraction due to L1 constraints against object extraction and extraction from DP Objects. The specific predictions for grammatical extractions are that beginning learners:-

(a) Would rank embedded subject extraction significantly higher than embedded object extraction
(b) Would significantly favour embedded subject extraction to extraction from DP Objects in embedded sentences
(c) Would assign significantly higher ranks to embedded passive subject extraction than embedded object extraction
(d) Would significantly prefer object extraction to extraction from DP Objects in simple and embedded sentences

The corresponding null hypotheses for beginning learners for grammatical extractions are that they:-

(a) Would not significantly rank embedded subject extraction higher than embedded object extraction
(b) Would not assign significantly higher ranks to embedded subject extraction than extraction from DP Objects in embedded sentences
(c) Would not significantly prefer embedded passive subject extraction to embedded object extraction
(d) Would not rank embedded object extraction significantly higher than extraction from DP Objects in simple and embedded sentences

Assuming that with continued exposure to the L2, learners receive sufficient evidence to overcome the influence of the L1, we hypothesised that learners at higher levels of proficiency would not favour some grammatical forms of extraction over other forms of grammatical extraction. The specific predictions for grammatical extractions are that advanced learners:-

(a) Would not assign significantly higher ranks to embedded subject extraction than embedded object extraction
(b) Would not rank embedded subject extraction significantly higher than extraction from DP Objects in embedded sentences
(c) Would not significantly prefer embedded passive subject extraction to embedded object extraction

(d) Would not rank embedded object extraction significantly higher than extraction from DP Objects in embedded sentences

The corresponding null hypotheses for grammatical extractions are that advanced learners:-

(a) Would rank embedded subject extraction significantly higher than embedded object extraction
(b) Would assign significantly higher ranks to embedded subject extraction than extraction from DP Objects in embedded sentences
(c) Would significantly favour embedded passive subject extraction to embedded object extraction
(d) Would rank embedded object extraction significantly higher than extraction from DP Objects in embedded sentences

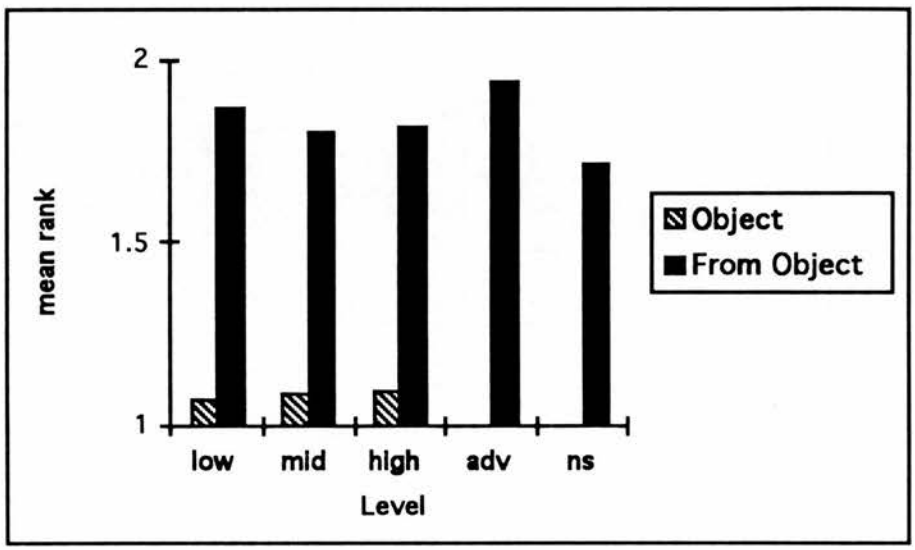
3.1 Grammatical Extraction of DP Objects and from DP Objects

The graph in Figure 8.13 shows that low-, mid- and high-level subjects prefer grammatical object extraction to extraction from DP Objects. All the advanced-level subjects and native speakers ranked grammatical object extraction significantly higher than extraction from DP Objects. Statistically, Friedman tests on the mean ranks in Table 8.13 show that the difference in the higher rank assigned to extraction of DP Objects over extraction from DP objects in the first set of lexicalizations is significant at the low ($F = 38.40$, $df = 1$, $p < 0.0001$), mid ($F = 31.74$, $df = 1$, $p < 0.0001$) and high ($F = 28.17$, $df = 1$, $p < 0.0001$) levels. Since the standard deviation for object extraction at the advanced and native speaker levels was zero, the Friedman test was not applied to the means at these levels.

TABLE 8.13: Mean Ranks for Grammatical Object Extraction and Extraction from Object (1)

	low	mid	high	adv	ns
Object	1.06667	1.08197	1.09259	1.00000	1.00000
From Object	1.86667	1.80328	1.81482	1.94000	1.71429

FIGURE 8.13: Mean Ranks for Grammatical Object Extraction and Extraction from Object (1)

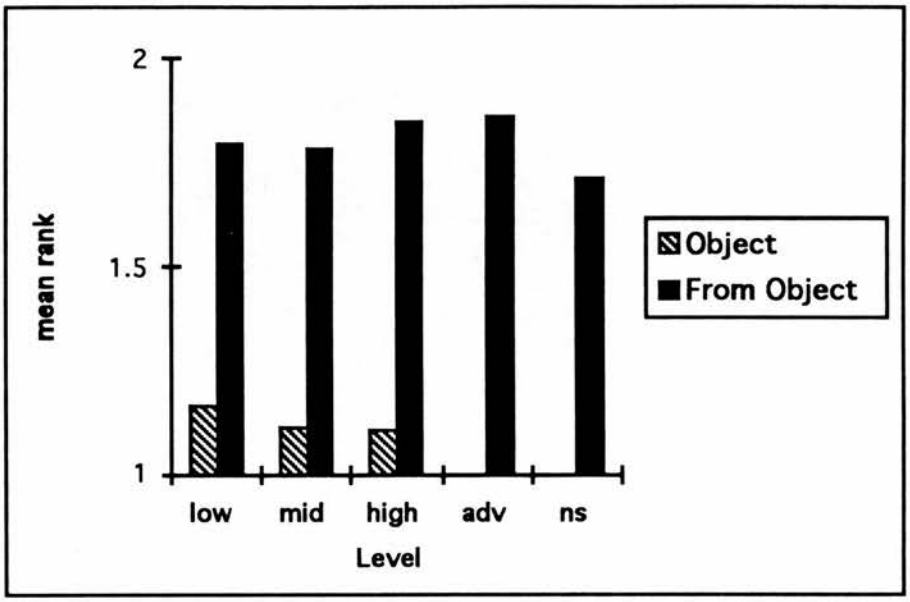


With the second set of lexicalizations too, the graph in Figure 8.14 shows that low, mid and high-level subjects favoured object extraction over extraction from DP Objects. The Friedman test on the mean ranks in Table 8.14 showed that the difference between extraction of DP Objects and extraction from DP objects is significant at the low ($F = 24.07$, $df = 1$, $p < 0.00010$), mid ($F = 26.67$, $df = 1$, $p < 0.0001$), and high ($F = 29.63$, $df = 1$, $p < 0.0001$) levels. As with the first set of lexicalizations, the Friedman test was not run for the responses from the advanced and native speaker levels since all the subjects at these levels ranked object extraction significantly higher than extraction from DP Objects.

TABLE 8.14: Mean Ranks for Grammatical Object Extraction and Extraction from Object (2)

	low	mid	high	adv	ns
Object	1.16667	1.11667	1.11111	1.00000	1.00000
From Object	1.80000	1.78333	1.85185	1.86000	1.71429

FIGURE 8.14: Mean Ranks for Grammatical Object Extraction and Extraction from Object (2)



The results for both sets of lexicalizations at the low level confirm the prediction that learners would be more strongly influenced by the two L1 constraints against extraction from DP Object than the single L1 constraint against extraction of DP Object. Contrary to the prediction that learners would be able to overcome the L1 constraints against extraction from DP Objects, subjects at the high and advanced levels too ranked object extraction over extraction from DP Objects. The results obtained at the native speaker level are also contrary to the prediction that native speakers would not show a preference between the two forms of grammatical extraction.

3.2 Grammatical Extraction from CP Objects

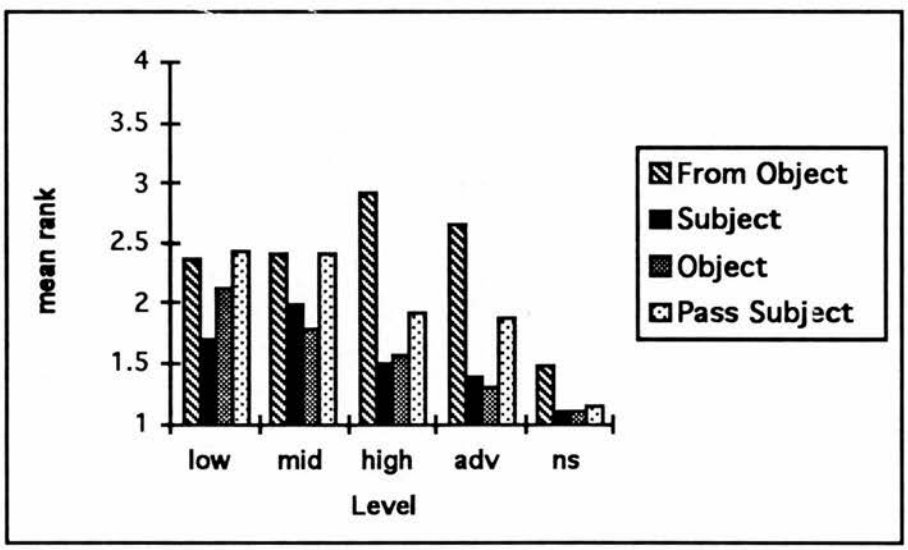
Friedman tests revealed that the differences in the mean ranks for the grammatical extraction-types in Table 8.15 are significant at the low ($F = 14.44$, $df = 3$, $p = 0.0024$), mid ($F = 14.19$, $df = 3$, $p = 0.0027$), high ($F = 58.87$, $df = 3$, $p < 0.0001$) and advanced ($F = 57.75$, $df = 3$, $p < 0.0001$) levels. The difference in the means are not statistically significant among native speakers ($F = 3.13$, $df = 3$, $p = 0.3722$), as predicted.

TABLE 8.15: Mean Ranks obtained for Grammatical Extraction from CP Objects (1)

	low	mid	high	adv	ns
From Object	2.36667	2.41667	2.90741	2.64706	1.47619
Subject	1.70000	1.98333	1.50000	1.39216	1.09524
Object	2.11667	1.78333	1.55556	1.29412	1.09524
Pass_Subject	2.43333	2.40000	1.92593	1.88235	1.14286

(*Notes:- Pass_Subject = Passive Subject*)

FIGURE 8.15: Mean Ranks obtained for Grammatical Extraction from CP Objects (1)



At the low level, subject extraction was ranked significantly higher than extraction from DP Objects, supporting the prediction that beginning learners would be influenced by the L1 constraints against extraction from DP Objects. No significant differences were found between subject extraction and extraction from DP Objects at the mid level but subjects at the high and advanced levels all ranked subject extraction significantly higher than extraction from DP Objects. This is contrary to the prediction that learners at higher levels of proficiency would overcome the L1 constraints against extraction from DP Objects.

Low level learners did not discriminate between object extraction and extraction from DP Objects, contrary to the prediction that beginning learners would be influenced by the greater number of L1 constraints against extraction from DP Objects than object extraction. As the graph in Figure 8.15 reveals, at the mid, high, and advanced levels, object extraction is ranked significantly higher than extraction from DP Objects. This supports the prediction that learners would be influenced by the greater number of L1 constraints against extraction from DP Objects but is not in conformity with the prediction that with continued exposure to the L2, they would be able to overcome them.

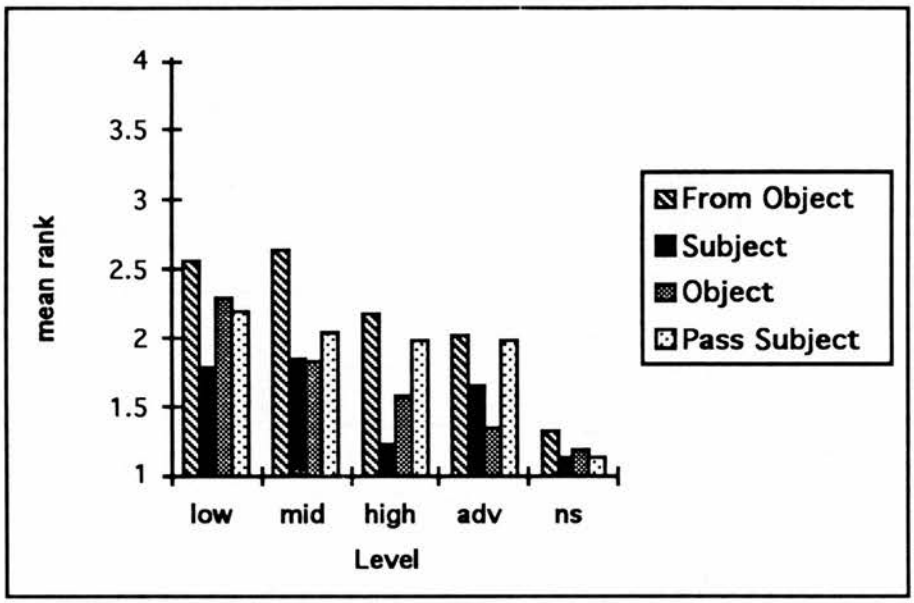
However, no significant differences were found between subject and object extraction at any of the levels, contrary to the prediction that learners would be influenced by the L1 constraints against object extraction. Neither were significant differences found between object and passive subject extraction, contrary to the prediction that beginning learners who were influenced by the L1 constraint against object extraction would significantly rank passive subject extraction over object extraction.

Friedman tests showed that for the second set of lexicalizations, the differences in the mean ranks reported in Table 8.16 are significant at the low ($F = 12.91$, $df = 3$, $p = 0.0048$), mid ($F = 20.40$, $df = 3$, $p = 0.0001$), high ($F = 27.84$, $df = 3$, $p < 0.0001$) and advanced ($F = 13.55$, $df = 3$, $p = 0.0036$) levels. As in the first set of lexicalizations, the differences in the mean ranks are not statistically significant among native speakers ($F = 0.63$, $df = 3$, $p = 0.8899$), which is in conformity with prediction.

TABLE 8.16: Means obtained for Grammatical Extraction from CP Objects (2)

	low	mid	high	adv	ns
From Object	2.56667	2.63934	2.18519	2.01961	1.33333
Subject	1.78333	1.85000	1.22222	1.64706	1.14286
Object	2.28333	1.83607	1.57407	1.35294	1.19048
Pass Subject	2.20000	2.03272	1.98148	1.98039	1.14286

FIGURE 8.16: Means obtained for Grammatical Extraction from CP Objects (2)



Pairwise comparison of the mean ranks in Table 8.16 showed that learners at all levels ranked subject extraction significantly higher than extraction from DP Objects. This is clearly revealed in the graph in Figure 8.16. As with the results from the first set of lexicalizations, this confirms the prediction that beginning learners would be influenced by the L1 constraints against extraction from DP Objects but not the prediction that learners would be able to overcome these constraints.

Low level learners did not discriminate between object extraction and extraction from DP Objects contrary to the prediction that they would be influenced by the greater number of L1 constraints against extraction from DP Objects than object extraction. However, mid-level subjects ranked object extraction significantly higher than extraction from DP Objects in conformity with prediction. High-level subjects too ranked object extraction significantly higher than extraction from DP Objects. Thus, the prediction that with continued exposure to the L2, learners would be able to overcome the L1 constraints against extraction from DP Objects is not supported. No significant difference was found between extraction from DP Objects and object extraction among subjects at the advanced level bearing out the prediction that learners at high levels of proficiency would be able to overcome the larger number of L1

constraints against extraction from DP Objects.

Neither were any significant differences found between subject and object extraction at any of the levels. This is contrary to the prediction that beginning learners would be influenced by the L1 constraint against object extraction. Furthermore, no significant differences were found between passive subject and object extraction among learners at any of the levels. These findings are contrary to the prediction that beginning learners would be influenced by the L1 constraint against object extraction into favouring extraction of the passive subject.

Advanced level learners and native speakers did not discriminate between any of the grammatical forms of extraction in this second set of lexicalizations. This supports the prediction that with continued exposure to the L2, learners would be able to overcome L1 constraints against grammatical forms of extractions in the L2. These results present a contrast to the findings obtained from the first lexicalization where advanced learners ranked subject and object extraction significantly higher than extraction from DP Objects.

4 Summary

4.1 Discrimination between Grammatical and Ungrammatical Extraction

(a) Subject Extraction from relative clauses, adjuncts, wh-islands and complex noun phrases

Learners at the low and mid levels were able to rank ungrammatical subject extraction from relative clauses and adjuncts (strong Subjacency violations) significantly lower than their grammatical equivalents. They were not able to give significantly lower ranks to ungrammatical subject extraction from wh-islands and complex noun phrases (weak Subjacency violations) than their grammatical equivalents. In contrast, high and advanced level learners and native speakers ranked ungrammatical subject extraction from all of the above clauses significantly lower than their grammatical equivalents, supporting the prediction that they would favour grammatical wh-extraction over ungrammatical wh-extraction.

(b) Object Extraction from relative clauses, adjuncts, wh-islands and complex noun phrases

With respect to strong Subjacency violations, low level learners could not rank ungrammatical object extraction from adjuncts significantly lower than the grammatical equivalent but could do so for extraction from relative clauses. Mid level learners could not rank ungrammatical object extraction from relative clauses significantly lower than the grammatical equivalent but could do so for extraction from adjuncts. With the weak Subjacency violations, both low and mid level learners encountered some difficulty in ranking ungrammatical object extraction from wh-islands and complex noun phrases significantly lower than their grammatical equivalents. As predicted, high and advanced level learners and native speaker subjects assigned significantly lower ranks to ungrammatical extraction from relative clauses, adjuncts, wh-islands and complex noun phrases than their grammatical equivalents.

(c) 'That-Trace Effects' and their Grammatical Equivalent

There was no clear developmental trend between low and high level learners in the results obtained from both sets of lexicalizations. Advanced level learners significantly preferred the grammatical equivalent of 'that-trace effects' to 'that-trace effects' in both pairs of lexicalizations. The native speakers unanimously preferred the grammatical equivalent of 'that-trace effects' to 'that-trace effects' in both pairs of lexicalizations, in conformity with prediction.

(d) Ungrammatical Extraction from DP Subjects and Grammatical Subject Extraction

Low and mid level learners faced some difficulty in ranking ungrammatical extraction from DP Subjects significantly higher than grammatical subject extraction, in conformity with what was predicted for beginning learners. In contrast, high and advanced-level subjects and native speakers assigned significantly higher ranks to grammatical subject extraction than ungrammatical extraction from DP Subjects, in conformity with prediction.

(e) Ungrammatical Extraction from DP Subjects and Grammatical Extraction from DP Objects

Subjects from all the five levels significantly favoured grammatical extraction from DP Objects to ungrammatical extraction from DP Subjects in both sets of lexicalizations,

contrary to the prediction for beginning learners but supporting that for advanced learners.

(f) Ungrammatical Extraction from CP Subjects and Grammatical Extraction from CP Objects

Low-, mid-, high- and advanced-level subjects could not consistently rank the grammatical extraction higher than the ungrammatical extraction in both sets of lexicalizations. This is contrary to the prediction that with continued exposure to the L2, learners would prefer grammatical extraction from CP Objects over ungrammatical extraction from CP Subjects. In contrast, native speakers ranked the grammatical extraction significantly higher than the ungrammatical extraction in both sets of lexicalizations.

4.2 Influence of the L1

(a) Grammatical Equivalents of Ungrammatical Extraction from Adjuncts, Wh-Islands and Complex Noun Phrases

Low and mid level learners showed some preference for grammatical subject extraction over object extraction in contrast to high, advanced and native speaker level subjects who did not. These findings support the predictions that beginning learners would be influenced by the L1 constraint against object extraction and that with continued exposure to the L2, learners would overcome L1 constraints against grammatical object extraction in the L2.

(b) Extraction from DP Objects and Object Extraction

Learners at all levels ranked object extraction significantly higher than extraction from DP Objects. However, this cannot be attributed solely to L1 influence since native speakers too ranked grammatical object extraction significantly higher than extraction from DP Objects.

(c) Extraction from CP Objects

Overall, low, mid and high level learners demonstrated significant preferences for grammatical subject and object extraction over extraction from DP Objects. Advanced -level subjects ranked subject, object and passive subject extraction significantly higher

than extraction from DP Objects in one set of lexicalizations but did not discriminate between the grammatical extraction-types in the other set of lexicalizations. Native speakers did not discriminate between the grammatical questions in both sets of lexicalizations. These results confirm the prediction that beginning learners would prefer subject, object and passive subject extraction in embedded sentences to extraction from DP Objects in the same sentences due to L1 constraints but not the prediction that they wouldbe able to overcome them. They are also not in conformity with the prediction that beginning learners would find grammatical subject extraction more acceptable than grammatical object extraction. However, the results are in conformity with the prediction that native speakers would find these grammatical sentences equally acceptable.

4.3 Cumulative Effect Hypothesis

Low and mid level learners ranked ungrammatical object extraction from relative clauses significantly higher than ungrammatical subject extraction from relative clauses. These results are in conformity with the prediction that learners who have begun the acquisitional process would favour sentences which violate a single UG principle (ungrammatical object extraction) to sentences which violate two UG principles (ungrammatical subject extraction).

Chapter 9

Presentation of Production Data

Introduction

The aims of the production task were both experimental and exploratory. The experimental part of the production task was designed to test whether learners conform to UG principles by avoiding UG violations. The exploratory aim of the task was to describe the common developmental constructions which Malay learners produced in order to arrive at a closer understanding of the processes they pass through in the acquisition of wh-movement in the L2.

1 Experimental Study: Ability to Avoid UG Violations

The main experimental hypothesis which was tested for beginning learners was that they would produce UG violations. Specifically, the following predictions were made. Beginning learners would not be able to avoid producing:-

(a) ungrammatical subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(b) ungrammatical object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(c) ungrammatical extraction from CP and DP subjects
(d) 'That-trace effects'

The null hypotheses for beginning learners were that they would avoid producing:-

(a) ungrammatical subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(b) ungrammatical object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(c) ungrammatical extraction from CP and DP subjects
(d) 'That-trace effects'

With continued exposure to the L2, learners were expected to acquire wh-movement in conformity with UG. The main prediction for L2 learners at higher levels of proficiency was that they would avoid the production of UG violations.

Specifically, the following predictions were made. With continued exposure to the L2, advanced learners would avoid the production of:-

(a) ungrammatical subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(b) ungrammatical object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(c) ungrammatical extraction from CP and DP subjects

However, since even native speakers sometimes accept 'that-trace effects', advanced learners were expected to continue producing 'that-trace effects'.

The null hypotheses for advanced learners was that they would not be able to avoid the production of:-

(a) ungrammatical subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(b) ungrammatical object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases
(c) ungrammatical extraction from CP and DP subjects

A further null hypothesis for advanced level learners was that they would be able to avoid the production of 'that-trace effects.'

1.1 Subject and Object Extraction from Relative Clauses, Adjuncts, Wh-Islands and Complex Noun Phrases

Below, we provide the violations which beginning learners produced in response to the stimuli given:-

Subject Extraction from:-

Relative Clauses:	Who did Roslinda lose the money which had given her?
Adjuncts:	Who did Lina come into the class after had left?
Wh-Islands:	Who did Kim found how became rich?
Complex NPs:	Who was Maimunah sad to hear the news had died?

Object Extraction from:-

Relative Clauses:	What has Ali met the person who wrote?
Adjuncts:	What did Maria come home after she bought?
Wh-Islands:	What does Farid know where Faizal bought?
Complex NPs:	What did Khatijah believe the story that Stewart had lost?

The percentages given in Tables 9.1 and 9.2 are calculated in terms of the number of subjects who produced violations over the total number of subjects at each level.

TABLE 9.1: Violations involving Subject and Object extraction from Relative Clauses, Adjuncts, Wh-island and Complex NPs

	Low		Mid		High		Adv		Ns	
	No	%	No	%	No	%	No	%	No	%
Sub_RC	6	10.00	3	5.00	0	0.00	0	0.00	0	0.00
Obj_RC	14	23.33	6	10.00	2	3.70	0	0.00	0	0.00
Sub_Adj	5	8.33	2	3.33	0	0.00	0	0.00	0	0.00
Obj_Adj	5	8.33	3	5.00	0	0.00	0	0.00	0	0.00
Sub_Wh	16	26.67	22	36.67	27	50.00	3	5.88	0	0.00
Obj_Wh	21	35.00	16	26.67	31	57.41	9	17.65	2	9.52
Sub_NP	12	20.00	11	18.33	0	0.00	0	0.00	0	0.00
Obj_NP	24	40.00	15	25.00	9	16.67	0	0.00	1	4.76

(Notes: Sub_RC = Subject Extraction from Relative clause; Obj_RC = Object Extraction from Relative Clause; Sub_Adj = Subject Extraction from Adjunct; Obj_ Adj = Object Extraction from Adjunct; Sub_Wh = Subject Extraction from Wh-Island; Obj_Wh = Object Extraction from Wh-Island; Sub_NP = Subject Extraction from Complex Noun Phrases, Obj_NP = Object Extraction from Complex Noun Phrases)

Significant differences were found in the production of subject extraction from relative clauses (χ^2 = 4.439, df = 4, p = 0.0060), adjuncts (χ^2 = 13.072, df = 4, p = 0.0109), wh-islands (χ^2 = 32. 011, df = 4, p = 0.0000) and complex nps ($\chi 2$ = 30.569, df = 4, p = 0.0000) between subjects at each level; advanced and native speaker subjects produced a higher percentage of these sentences than low-, mid- and high-level subjects. Significant differences were also found in the production of object extraction from relative clauses ($\chi 2$ = 33.025, df = 4, p = 0.0000), adjuncts ($\chi 2$ = 11.413, df = 4, p = 0.0223), Wh-Islands ($\chi 2$ = 25.423, df = 4, p = 0.0000) and complex noun phrases ($\chi 2$ = 39.601, df = 4, p = 0.0000) between subjects at each level. Again, low- mid- and high-level subjects produced a higher percentage of these

sentences than advanced level and native speaker subjects. These results support the hypothesis that beginning learners will produce a significantly higher frequency of violations involving subject and object extraction from the above clauses than advanced learners and native speakers. The production of violations by low- and mid- level subjects in Table 9.1 also shows a higher percentage of sentences involving ungrammatical extraction from weak Subjacency violations (wh-islands and complex noun phrases) than strong violations (relative clauses and adjuncts).

1.2 Extraction from DP and CP Subjects and 'That-trace effects'

The responses which learners produced in response to stimuli which tested whether learners would produce ungrammatical extraction from DP Subjects and CP Subjects are given below:-

Extraction from DP Subjects:	What did the news of surprise Mary?
Extraction from CP Subjects:	What did that John lost was not surprising?
'That-trace effects':	Who does Maniam know that likes to watch films?

TABLE 9.2: Number of Violations involving extraction from CP and DP Subjects and 'That-trace effects'

	Low		Mid		High		Adv		Ns	
	No	%	No	%	No	%	No	%	No	%
CP Subject	21	35.00	10	16.67	1	1.85	1	1.96	0	0.00
DP Subject	14	23.33	8	13.33	10	18.52	1	1.96	0	0.00
'That-trace effects'	12	20.00	14	23.33	27	50.00	15	29.41	5	23.81

The difference in the production of violations involving extraction from CP Subjects between subjects at the low level (χ^2 = 8.993, df = 1, p = 0.0027) and those at other levels is significant. The difference in the production of violations involving extraction from DP Subjects between subjects at the low level and those at the other levels is also significant (χ^2 = 36.112, df = 1, p = 0.0000). The high percentage of violations involving extraction from CP and DP subjects produced at the low and mid levels relative to the high, advanced and native speaker levels is clearly evident in Table 9.2. These results are in conformity with the hypothesis that beginning learners will produce strong UG violations with a significantly higher frequency than

learners at higher levels of proficiency and native speakers. The difference in the production of 'that-trace effects' between subjects at the low level and other subjects is not significant in conformity with the prediction that beginning learners will not produce weak violations with a higher frequency than subjects at other levels.

2 Exploratory Study: Ability to Produce Grammatical Sentences

The exploratory part of the study was data driven. Our main goal was to provide a description of the common developmental constructions produced by learners at the four levels of proficiency. From this description, we hoped to arrive at a closer understanding of how L2 learners progress towards wh-movement in the target language. The stimuli provided subjects with the opportunity to produce grammatical subject and object extraction and extraction from DP Objects in simple and embedded sentences.

The responses for each stimulus item was coded into categories. We concentrated on word order and choice of auxiliary and ignored tense and agreement errors since these were irrelevant for the purposes of our study. Responses which did not question the underlined item were coded as 'irrelevant.' Chi-square tests were then carried out to determine whether differences in the production of common responses across the five levels of subjects are significant. This was supplemented by qualitative analysis of responses which were too few in number to be statistically analysed but which were revealing of the acquisitional process. In the presentation of this latter data, the following coding was adopted for ease of reference and economy of space. The data is italicised and followed by a parenthesis containing a pair or pairs of numbers. The first number of the pair indicates the number of subjects who produced the particular response while the second number indicates the level of the subjects where 1 refers to the low level, 2, the mid level, 3, the high level, 4, the advanced level and 5, the native speaker level. Thus, the parenthesis (3, 1; 4, 2) indicates that the data which precedes it was produced by three subjects at the low level and four subjects at the mid level.

2.1 Subject Extraction in Simple Sentences

Below, we provide the target response for subject extraction in simple sentences as well as the main interlanguage constructions which were produced, that is, the 'be form' and constructions with inappropriate 'do' support:-

Target response: 'Who likes football?'
'Be form': 'Who is likes football?'
'Do' support: 'Who do likes football?'

TABLE 9.3: Responses to stimuli requiring Subject extraction in Simple Sentences

	Low		Mid		High		Adv		Ns	
	No	%	No	%	No	%	No	%	No	%
Target	31	51.67	36	60.00	39	72.22	36	70.59	18	85.71
'Be form'	8	13.33	8	13.33	2	3.70	0	0.00	0	0.00
'Do' Support	3	5.00	5	8.33	5	9.26	0	0.00	0	0.00
Others	3	5.00	2	3.33	0	0.00	2	3.92	0	0.00
Irrelevant	15	25.00	9	15.00	8	14.81	13	25.49	3	14.29

Table 9.3 clearly indicates that the most common interlanguage construction was the 'be form' which was produced by subjects at the low and mid levels, with a decrease in production above these levels. This was followed by inappropriate use of 'do' support. The difference in the production of target responses at each level is significant (χ^2 = 16.444, df = 4, p = 0.0025); high and advanced level learners produced a higher percentage of such sentences than low and mid level learners.

2.2 Subject Extraction in Embedded Sentences

Below, we provide the target response for embedded subject extraction and the main transitional constructions. These were the 'be form', the uninverted question and various forms of short questions:-

Target Response: 'Who does Mrs. Lim hope has gone to school?'
'Be form': 'Who is Mrs. Lim hopes has gone to school?'
Uninverted form: 'Who Mrs. Lim hopes has gone to school?'
Short Questions: 'Who did Mrs. Lim hope?'; 'What is Mrs. Lim hope?' etc.

TABLE:9.4: Responses to stimuli requiring embedded Subject extraction

	Low		Mid		High		Adv		Ns	
	No	%	No	%	No	%	No	%	No	%
Target	7	11.67	14	23.33	41	75.93	36	70.59	19	90.48
'Be form'	8	13.33	15	25.00	7	12.96	0	0.00	0	0.00
Uninverted	13	21.67	6	10.00	1	1.85	3	5.88	0	0.00
Short Questions	6	10.00	9	15.00	1	1.85	0	0.00	0	0.00
Irrelevant	7	11.67	4	6.67	1	1.85	9	17.65	1	4.76
Others	19	31.67	12	20.00	3	5.56	3	7.84	1	4.76

Table 9.4 indicates that the most common transitional construction was the 'be form'; the difference in production by subjects at each level is highly significant (χ^2 = 19.191, df = 4, p = 0.0007); the highest percentage of 'be forms' occurs at the mid level after which there is a sudden drop at the high level. As Table 9.4 shows, these forms are completely absent at the advanced and native speaker level. The other common interlanguage construction was the uninverted structure; the difference in the production of this form by subjects at the low, mid and high levels and subjects at the advanced and native speaker levels is also significant (χ^2 = 7.407, df = 1, p = 0.0065). The increase in 'be forms' and decrease in uninverted structures at mid level allows for the possibility that some learners may replace the uninverted structure with the 'be form'. Low- and mid-level subjects produced a higher percentage of short questions than subjects at higher levels of proficiency. The difference in production of short questions between subjects at the low and mid levels and subjects at other levels is significant (χ^2 = 6.797, df = 1, p = 0.0091). These involved both subject and object extraction. Examples of short questions with object extraction are given in (1,a, b and c):-

(1) (a) *What is Mrs. Lim hopes?* (4, 2)
(b) *What did Mrs. Lim hopes?* (2, 1; 3, 2)
(c) *What that Mrs. Lim hopes?* (1, 2)

Short questions in which the wh-element for subject extraction was used were also produced:-

(2) (a) *Who Mrs.Lim hopes?* (1, 1)
(b) *Who is Mrs. Lim hopes?* (1, 2)

The large number of responses which were coded under 'other' reflects the numerous transitional constructions which were produced by subjects at the low and mid levels. Examples of the transitional constructions produced include:-

(3) (a) *Who is /did Mrs. Lim hopes that he went to school?* (4, 1)
(b) *What Mrs. Lim hopes the Steven went the school?* (1, 1)
(c) *Who went to school when Mrs. Lim hopes?'* (1, 1)

In (3a), the gap in the embedded clause is filled by a resumptive pronoun and in (3b), there is no extraction. In (3c), the embedded clause is fronted and there is local movement within the embedded clause. Wh-insitu questions such as 'Mrs. Lim hopes that who went to school?' (2, 1; 2, 2; 1, 4) were also produced. A significant difference in the production of target responses for embedded subject extraction was found between subjects at each level (χ^2 = 89.659, df = 4, p = 0.0000); a lower percentage of target responses was produced by learners at the low and mid levels than by subjects at the high, advanced and native speaker levels.

2.3 Object Extraction in Simple Sentences

Below, we provide the target responses for object extraction in simple sentences and the main constructions which were produced by subjects:

Target responses: 'What does Karen like?'
Be form: 'What is Karen like?'
Uninverted: 'What Karen like?'

TABLE 9.5: Responses to stimuli requiring Object extraction in Simple Sentences

	Low		Mid		High		Adv		Ns	
	No	%	No	%	No	%	No	%	No	%
Target	18	30.00	24	40.00	43	79.63	44	81.48	21	100.0
'Be form'	27	45.00	24	40.00	5	9.26	0	0.00	0	0.00
Uninverted	10	16.67	8	13.33	4	7.41	0	0.00	0	0.00
Others	5	8.33	4	6.67	2	3.70	7	13.73	0	0.00

Table 9.5 shows that the predominant interlanguage construction at the low and mid levels was the 'be form'. Chi square tests revealed that there is a highly significant difference in the production of the 'be form' by subjects at the low level, subjects at

the mid level and those at the high, advanced and native speaker levels (χ^2 = 53.591, df = 2, p = 0.0000). The difference in the production of the second most predominant construction, the uninverted construction, by subjects at the low level, subjects at the mid level and those at the high, advanced and native speaker levels is also statistically significant (χ^2 = 11.260, df = 2, p = 0.0036). There is a higher percentage of the 'be forms' than uninverted constructions at the low, mid and high levels. There is a highly significant difference in the ability of subjects at each level to produce target responses with increased exposure to the L2 (χ^2 = 74.640, df = 4, p = 0.0000)

2.4 Object Extraction in Embedded Sentences

The target responses for embedded object extraction and the interlanguage constructions which were produced by learners are given below. The latter include the 'be form', the uninverted form and various short questions:-

Target Response: 'What does Rosnah hope that Zaid will buy?'
'Be form': 'What is Rosnah hope Zaid will buy?'
Uninverted form: 'What Rosnah hope Zaid will buy?'
Short questions: 'What does Mrs. Lim hope?'; 'What is Mrs. Lim hopes?' etc

TABLE 9.6: Responses to stimuli requiring embedded Object extraction

	Low		Mid		High		Adv		Ns	
	No	%	No	%	No	%	No	%	No	%
Target	7	11.67	13	21.67	37	68.52	47	87.04	19	90.48
Uninverted	14	23.33	10	16.67	2	3.70	0	0.00	0	0.00
'Be form'	5	8.33	9	15.00	5	9.26	0	0.00	0	0.00
Short Questions	15	25.00	15	25.00	5	9.26	1	1.96	1	4.76
Others	14	23.33	6	10.00	4	7.41	1	1.96	1	4.76
Irrelevant	5	8.33	7	11.67	1	1.85	2	3.92	0	0.00

Table 9.6 shows that the predominant response by low- and mid-level subjects was the short question. The difference in the production of short questions by subjects at the low level, the mid level and those at the high, advanced and native speaker levels is highly significant (χ^2 = 22.541, df = 2, p < 0.0001). Comparing the production of

short questions in Table 9.4 and 9.6, we can see that a lower percentage was produced in response to embedded subject extraction than embedded object extraction at the low, mid and high levels.

As can also be observed from Table 9.6, the second most predominant construction was the 'be form'. The difference in the production of 'be forms' by subjects at the low and mid levels and those at the high, advanced and native speaker level is also statistically highly significant (χ^2 = 6.608 , df = 1, p = 0.0102). There is a steady decrease in the production of uninverted structures with increased exposure to the L2; the difference in the constructions produced by subjects at each level is statistically highly significant (χ^2 = 28.397, df = 4, p = 0.0000). Comparing the production of 'be forms' and uninverted structures at the low and mid levels, we observe a decrease in the production of uninverted structures and an increase in the production of 'be forms' at the mid level. At the high level there is a dramatic change in the number of target and non-target forms. Indeed, the difference in the ability of subjects to produce the target language form with increased exposure to the L2 is highly significant (χ^2 = 100.979, df = 4, p = 0.0000). Wh-in-situ questions were only produced by two low-level learners.

The category 'others' in Table 9.6 consists of other transitional constructions: these include conjoined structures as in (4a), yes-no questions in embedded clauses as in (4b), movement within the embedded clause as in (4c) and fronting of the embedded clause and local movement within the clause, as in (4d):-

(4) (a) *What is Zaid buy and who hopes their?*
(b) *What did Rosita do will Zaid buy flowers?*
(c) *Rosita hopes that will Zaid buy flowers?*
(d) *What is Zaid will buy that hopes Rosita?*

In order to determine whether the developmental changes which have been noted in in responses to stimuli which required embedded subject and object extraction are also found in the production of short questions where embedded object extraction is required, the types of short questions produced were studied. They were coded as follows:-

Target Response: 'What did Rosnah hope?'
'Be form': 'What is Rosnah hope?'
Uninverted Form: 'What Rosnah hope?'

TABLE 9.7: Short Questions produced in response to items requiring embedded Object extraction

	Low		Mid		High		Adv		Ns	
	No	%	No	%	No	%	No	%	No	%
Target	3	5.00	6	10.00	3	5.56	1	1.96	1	4.76
'Be form'	8	13.33	8	13.33	0	0.00	0	0.00	0	0.00
Uninverted	5	5.00	2	3.33	1	1.85	0	0.00	0	0.00

Table 9.7 shows that the predominant type of short question at the low level was the 'be form' followed by the uninverted structure. At the mid level, the proportion of 'be forms' produced remained constant while there was a fall in the production of uninverted questions. Many of the short questions produced suggested that learners had difficulty analysing the complementizer 'that':-

(5) (a) *What Rosita hopes that Zaid?* (3,1)
(b) *What is Rosita hopes that Zaid?* (3,1; 1,2)
(c) *What does Rosita hope that Zaid?* (2, 2)

The sentences produced indicate that learners may be misanalysing the complementizer as a preposition.[1]

2.5 Extraction from DP Objects in Simple Sentences

Few target responses were produced in response to stimuli which required extraction from DP Objects in simple sentences by subjects at all levels. Indeed, at the high,

[1] This suggestion is supported by the production of short questions in which appropriate prepositions as in (a) and inappropriate prepositions as in (b), (c), (d) and (e) are produced:

(i) (a) *What is Rosita hopes from Zaid?* (2,1)
(b) *What Rosita hopes to Zaid?* (1, 2)
(c) *What is Rosita hopes to Zaid?* (2,1; 2, 2)
(d) *What does Rosita hopes to Zaid?* (1,1; 2,2)
(e) *What Rosita hopes that for Zaid?* (1, 1)

advanced and native speaker levels more than half the subjects produced responses which did not involve prepositional phrase extraction. We shall refer to these responses as paraphrases. The main types of paraphrases and prepositional phrase extraction are given below:-

Paraphrases
'Cleft' construction: 'What boys that Mary likes?'
Others: 'What boy Mary likes?'; What boys does Mary likes?' etc.

Prepositional Phase extraction
Target: 'What does Mary like boys with?'
Null prep: 'What does Mary like boys?'
Prepositional noun inversion: 'What does Mary like with boys?'

The number and percentage of such constructions produced at each level are reported in Table 9.8.

TABLE 9.8: Responses to stimuli requiring extraction from DP Objects in Simple Sentences

		Low		Mid		High		Adv		Ns	
		No	%	No	%	No	%	No	%	No	%
Paraphrase	'Cleft'	3	5.00	12	20.00	7	12.96	2	3.92	0	0.00
	Others	24	40.00	31	51.67	32	59.26	36	70.59	13	61.90
Prep Phrase Extraction	Target	4	6.67	3	5.00	8	14.81	4	7.84	8	38.10
	Null Prep	6	10.00	6	10.00	0	0.00	0	0.00	0	0.00
	Prep Inv	6	10.00	2	3.33	0	0.00	0	0.00	0	0.00
	Irrelevant	11	18.33	2	3.33	1	1.85	4	7.84	0	0.00
	Others	6	10.00	4	6.67	6	11.11	5	9.80	0	0.00

(Notes: Prep Phrase Extraction = Prepositional Phrase Extraction, 'Cleft' = cleft-like constructions, Prep Inv = Preposition Noun Inversion)

Table 9.8 shows that the other common response at the low, mid and high levels was the ungrammatical paraphrase, of which the following cleft-like construction was predominant:-

(6) (a) *What kind of boys that Mary likes?* (3, 1; 12, 2; 7, 3; 2, 4)

but other cleft-like constructions included the following:-

(7) (a) *What a boys are Mary likes?* (1, 1)
(b) *What is the boy that Mary likes?* (1, 1)
(c) *Who does the boys Mary likes?* (1, 1)
(d) *What is the boys that Mary likes?* (1, 2)
(e) *How does the boys that Mary likes?*
(f) *What kind of hair that the boys have that Mary likes?* (3, 1; 1, 4)
(g) *What is the type of hair that Mary likes to?* (1, 4)

Focusing of the DP Object was also noted in the the following constructions:-

(8) (a) *Boys of what type of hair does Mary like?* (1, 4)
(b) *Boys with which hair does Mary like?* (1, 4)

Table 9.8 indicates that 'Null prep' in which the preposition is omitted in sentences requiring preposition-stranding or pied-piping was produced by low and mid level learners. This was found occurring with other interlanguage characteristics such as the uninverted structure as in (9a) and the 'be form' as in (9b) and (c): -

(9) (a) *What Mary likes the boys?* (1, 1)
(b) *What is Mary like boys?* (2, 1; 4, 2)
(c) *What hair was Mary like the boys?* (1, 1)

It was also noted in constructions with 'do' support as in (d):-

(d) *What does Mary like boys?* (1, 1; 2, 2)

The difference in the production of questions with null prep between subjects at the low and mid levels and subjects at other levels is significant ($\chi^2 = 9.910$, df = 1, p = 0.0016).

Various forms of non-target language prepositional phrase extraction were produced, particularly at the low and mid levels. Table 9.8 shows that a common form of prepositional extraction which was produced by low- and mid-level subjects included constructions in which the preposition was inverted with the head of the DP object (prepositional noun inversion) as in:-

(10) (a) *What does Mary like with boys?* (6,1; 2, 2)

In other transitional forms of prepositional phrase extraction, the head of the DP Object, 'boys' was fronted with the preposition as in:-

(11) (a) *Who boys with Mary likes?* (1,1)
(b) *What kind of boys with Mary likes?* (1, 2)
(c) *What boys with which Mary likes?* (1,3)
(d) *How boys with Mary likes?* (5,1)

In yet other transitional constructions, the preposition occurred in pre-subject position:-

(12) (a) *Who with Mary likes boys?* (1, 2)
(b) *What with Mary likes boys?* (1,1)
(c) *With what Mary likes boys?'* (1,1)

Pied-piping was only observed once at the low level and once at the advanced level.

As is clear from Table 9.8, there is no clear developmental pattern in the production of target responses with increased exposure to the L2. Among learners, the highest percentage of target responses was produced at the high level while advanced level learners appeared to avoid it. Native speakers produced the highest percentage of target responses but this was not the predominant response; two thirds of the subjects at this level produced grammatical paraphrases. A few learners produce non-target language forms in which the preposition was stranded and in which the head of the DP object (boys) is moved along with the wh-element, as in the following constructions:-

(13) (a) *What boys does Mary like with?* (1, 1)
(b) *Who is boys Mary like with?* (2, 1; 1, 2)
(c) *What boys that Mary likes with?* (1, 1; 1, 3)

2.6 Extraction from DP Object in Embedded Sentences

As with extraction from DP Objects in simple sentences, few target responses were produced in response to stimuli requiring extraction from DP Objects in embedded sentences at each of the five levels of subjects. Instead, a variety of paraphrases were produced as well as transitional constructions which included various forms of non-target language prepositional phrase extraction. The main constructions which were

produced are given below:-

Paraphrase

Relative Clause-like Construction: 'What kind of films that Sue likes to watch which Jim knows?'

Others: 'What does Jim know that Sue likes to watch?' etc.

Prepositional Phrase Extraction

Target: 'What does Jim know that Sue likes to watch films about?'

Null Prep: 'What does Jim know that Sue likes to watch films?'

Fronting of embedded clause: 'What Sue likes to watch films about that Jim knows?'

TABLE 9.9: Responses to stimuli requiring extraction from DP Objects in embedded sentences

		Low		Mid		High		Adv		Ns	
		No	%	No	%	No	%	No	%	No	%
Paraphrase	'Rel Cl'	10	16.67	8	13.33	13	24.07	5	9.80	0	0.00
	Others	11	18.33	17	28.33	10	18.52	26	50.98	11	52.38
Prep Phrase Extraction	Target	2	3.33	7	11.67	8	14.81	1	1.96	7	33.33
	Null Prep	6	10.00	4	6.67	1	1.85	0	0.00	0	0.00
	Front_emb	5	8.33	3	5.00	6	11.11	5	9.80	0	0.00
	Irrelevant	13	21.67	6	10.00	0	0.00	5	9.80	2	9.52
	Others	13	21.67	15	25.00	16	29.63	9	17.65	1	4.76

(Notes: Prep Phrase Extraction= Prepositional Phrase Extraction, 'Rel Cl' = Relative Clause-like construction, Front_emb = Fronting of embedded clause)

As Table 9.9 indicates, among the paraphrases which were produced, a common response included a relative clause-like construction. These included constructions such as:-

(14) (a) *What kind of films does Sue like to watch which Jim knows?* (1,3; 1 ,4)
(b) *What films is Sue like that Jim knows?*' (1, 3)
(c) *What films does Sue like to watch that Jim knows?* (7, 2; 10, 3; 4, 4)
(d) *What films Sue likes to watch that Jim knows?* (1, 2; 1, 3)
(e) *What kind of films that Sue likes to watch which Jim knows?* (1, 3)
(f) *What type of films that Sue likes to watch that Jim knows?* (1, 4)

Other paraphrases produced were cleft constructions such as the following:-

(15) (a) *What was the films that Jim knows that Sue likes to watch?* (1,1)
(b) *What was a film was Jim know that Sue likes to watch?* (1,1)
(c) *What is a film that Jim knows that Sue likes?* (1,2)
(d) *What is films that Jim knows Sue likes to watch?* (1,3)
(e) *What is films Sue likes to watch?* (1,1)

Yet other paraphrases involved wh-movement within the embedded clause as in the following examples:-

(16) (a) *Jim knows what film Sue likes to watch?* (1, 1)
(b) *Jim knows what Sue likes to watch?* (1, 1)
(c) *That Jim knows what Sue likes to watch?* (1, 2)

As Table 9.9 indicates, another interlanguage construction was the null prep which occurred at the low and mid levels with uninverted constructions in (17a), the 'be form' in (17b) and (c) and with 'do' support in (17d) and (e):-

(17) (a) *What Jim knows that Sue likes to watch films?* (1, 1; 1, 2)
(b) *What is Sue likes to watch film?* (1, 2)
(c) *What is Jim knows that Sue likes to watch films?* (1, 3)
(d) *What does Jim know that Sue likes to watch films?* (1, 1)
(e) *What does Sue like to watch films that Jim knows?* (1, 1)

As Table 9.9 indicates, the highest percentage of target responses among learners is at the high level; advanced-level subjects avoided the target response and it is not the predominant response even among native speakers. Non-target forms of preposition-stranding did occur, particularly at the low and mid levels along with other interlanguage features of wh-movement such as uninverted constructions in (18a), the 'be form' in (18b) and (c) and the presence of 'that' in matrix COMP in (18d) and (e). In other non-target forms of preposition-stranding, the wh-element includes the head of the DP object as in (18f), (g) and (h):-

(18) (a) *What Jim knows that Sue likes to watch films about?* (1,1)
(b) *What was Jim know Sue liked to watch films about?* (1,2)
(c) *What is Jim know that Sue likes to watch films about is?* (1, 2)
(d) *What thing that Jim knows that Sue likes to watch films about?* (1, 1)
(e) *What that Jim knows that Sue likes to watch a films about?* (1, 2)
(f) *What films that Sue likes about?*(1, 1)
(g) *What films that Jim knows Sue likes to watch films about?* (1, 1; 1, 3)
(h) *What films does Jim know that Sue likes to watch about?* (2,3; 1,4)

As Table 9.9 indicates, constructions in which the embedded clause was fronted were also produced (fronting of embedded clause). In these constructions, target language prepositional movement to embedded Spec, CP position was also produced. A few examples of such constructions are given below:-

(19) (a) *What did Sue likes to watch films about that Jim knows?* (1, 3)
(b) *What Sue likes to watch films about that Jim knows?* (1, 3)
(c) *What does Sue likes to watch films about make Jim knows?* (1, 2)

Another form of target language prepositional movement to embedded Spec, CP position was also produced in which the embedded clause does not move:-

(20) (a) *What is Jim know about films that Sue likes to watch?* (1, 3)
(b) *What does Jim know about the type of films that Sue likes to watch?* (1, 3; 2, 4)
(c) *What does Jim know about films that Sue likes?* (1, 2)

Yet another response which is permitted by the target language was to front the DP object in the embedded clause to the position of the matrix clause with local movement of the wh-element to sentence-initial position:-

(21) (a) *What is the film about that Jim knows Sue likes to watch?* (1,2)

Other constructions which involved prepositional phrase extraction contained interlanguage wh-elements which included the head of the DP Object followed by the preposition in pre-subject position. Examples of this response are:-

(22) (a) *What film about that Sue likes to watch?* (1, 1)
(b) *What film about Sue likes to watch that Jim knows?* (1, 1)
(c) *What film about that Jim knows that Sue likes to watch?* (1, 1; 3, 3)
(d) *What films about that Jim knows Sue likes?* (3, 2)
(e) *What films about was Jim knows that Sue likes to watch?* (1, 1)

In another form of interlanguage wh-element, the preposition preceded the head of the DP Object in pre-subject position. Examples of this are:-

(23) (a) *What about films Jim knows that Sue likes to watch?* (1, 1; 2, 2)
(b) *What about films Jim knows that Sue likes?* (1, 1)
(c) *What do about films that Jim knows that Sue likes to watch?* (1,3)

Another response involved movement of the preposition to embedded Spec, CP position:-

(24) (a) *What is Jim knows about that Sue likes to watch films?* (1, 2)

Another transitional construction which was produced by learners was the focus-fronted construction. Examples are:-

(25) (a) *Films about what Jim knows that Sue likes to watch?* (1, 2; 2, 3)
(b) *Films about what that Jim knows that Sue likes to watch?* (1, 3)
(c) *Films about what does Jim know that Sue likes most?* (1, 3)

These constructions occurred along with other developmental characteristics which have already been noted such as the uninverted construction as in (25a) and the presence of 'that' in matrix COMP, as in (25b).

2.7 Summary

Production of UG Violations

(a) Significant differences were found in the production of ungrammatical subject and object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases between subjects at each level; subjects at the low level, mid and high levels produced a higher percentage of ungrammatical subject and object extraction than advanced-level subjects and native speakers.

(b) Low and mid level learners produced a higher percentage of sentences involving ungrammatical extraction from weak violations (wh-islands and complex noun phrases) than strong violations (relative clauses and adjuncts).

(c) Low-level subjects produced significantly more sentences involving ungrammatical extraction from CP Subjects than subjects at other levels.

(d) Subjects at the low level produced significantly more sentences involving ungrammatical extraction from DP Subjects than subjects at other levels.

(e) Low-level learners did not produce significantly more sentences involving 'that trace effects' than subjects at other levels.

2. Interlanguage Constructions

(a) The most frequently produced structure by beginning learners in response to stimuli requiring object extraction in simple sentences was the 'be form'. There appeared to be some overgeneralization of 'do' support in subject extraction in simple sentences at the low, mid and high levels.

(b) The most frequently produced structures by beginning learners in response to stimuli requiring embedded subject and object extraction from embedded clauses was the 'be form', the uninverted structure and the short question.

(c) There was an increase in 'be forms' and a decrease in uninverted structures at the mid level for embedded subject extraction, object extraction in simple sentences and embedded object extraction.

(d) A higher percentage of short questions was produced in response to embedded object extraction than embedded subject extraction at the low, mid and high levels.

(e) The short questions produced consisted of uninverted structures, 'be forms' and target language structures. The relative production of uninverted structures and 'be forms' at the low, mid and high levels allows for the possibility that the 'be forms' may replace the uninverted structure.

(f) In some of the short questions produced, learners appeared to have misanalysed the lexical complementizer 'that' as a preposition.

(g) In response to stimuli which required extraction from DP Objects in simple sentences more than half the subjects at the mid, high, advanced and native speaker levels produced paraphrases which did not require prepositional phrase extraction. Of these paraphrases, cleft-like constructions were common.

(h) Constructions which involved prepositional phrase extraction in response to stimuli which required extraction from DP Objects in simple sentences included 'null prep' and various forms of transitional wh-elements in pre-subject position in which the preposition was not stranded.

(i) Subjects' main response to stimuli requiring extraction from DP Objects in embedded sentences was some form of paraphrase. Paraphrases commonly produced at each level included relative clause-like constructions, cleft constructions and wh-movement within the embedded clause.

(j) Of the learners who produced prepositional phrase extraction in response to stimuli which required extraction from DP Objects in embedded sentences, some learners moved the prepositional phrase to target language position in embedded Spec, CP, with or without movement of the embedded clause.

(k) Transitional prepositional phrase extraction where extraction from DP Objects in embedded sentences was required also included 'null prep', non-target language wh-elements and focus-fronted constructions.

3. Production of Target Language Forms

(a) With continued exposure to the L2, there was an increase in the production of target responses for subject extraction in simple sentences. High and advanced level subjects produced a higher percentage of sentences involving embedded subject extraction than subjects at the low and mid levels.

(b) With continued exposure to the L2, there was an increase in the production of target responses for object extraction in simple sentences and embedded object extraction.

(c) There was no clear developmental trend in the production of target responses for sentences involving extraction from DP Objects in simple and embedded sentences. Even at the native speaker level, only slightly more than a third of the subjects produced responses which involved preposition-stranding in simple and embedded sentences.

Chapter 10

Discussion of Results

Introduction

In chapters 7, 8 and 9, we described and summarised the results of the rating, ranking and production tasks, respectively. In this chapter, we discuss the results obtained in order to determine whether we may reject the null hypotheses which were outlined in the three chapters describing the results. We also describe the developmental pattern which emerges from our study of the production data.

To recapitulate, our first general hypothesis is that beginning Malay learners generate wh-questions in the absence of movement. Our second general hypothesis is that with continued exposure to the L2, they will acquire wh-movement through the continued accessibility of UG principles. Our next general hypothesis is that beginning learners will find some grammatical sentences more acceptable than others due to L1 influences and developmental factors. Finally, our last general hypothesis is that with continued exposure to the L2 and accessibility to UG principles, they will recognise the same relative acceptability of grammatical sentences as native speakers.

The overall picture which emerges from the convergence of various forms of evidence is that once learners have acquired wh-movement, they have access to UG principles which are relevant to wh-movement. One of the most important forms of evidence that UG is accessible to the L2 learner is the ability not only to reject Subjacency violations but to reject strong violations more determinately than weak violations. Another is the ability to give a lower rating to the less weak of two weak Subjacency violations than to the weaker of the violations. Yet another important form of evidence that UG continues to be accessible to the L2 learner is the ability to reject the violation of two UG principles more firmly than the violation of a single UG principle. This ability to discriminate between UG violations in accordance with UG theoretic predictions demonstrates that learners not only possess knowledge that UG principles are violated but also knowledge of the extent to which UG principles are violated. As we have already argued in Chapter 5, knowledge of the latter constitutes much stronger evidence that learners have access to UG principles than knowledge only of the former.

Another important form of evidence is learners' ability to discriminate between grammatical and ungrammatical wh-extraction. Learners may receive positive evidence of grammatical wh-movement but they do not receive evidence of what constitutes ungrammatical movement in the input. Thus, it appears that learners' ability to recognise ungrammatical wh-movement is dependent on knowledge of UG constraints. Consequently, evidence that learners are able to discriminate between grammatical and ungrammatical wh-movement in favour of the former suggests that their behaviour is constrained by knowledge of UG principles. In the case of L2 learners whose L1 does not instantiate wh-movement, this implies that they continue to have direct access to UG principles.

A further form of evidence that demonstrates the continued accessibility of UG principles is the ability to overcome L1 influences. In the case of Malay learners of English, there is the general influence of the absence of wh-movement in the L1. Since the empty category pro is not allowed in object position (Huang, 1984), it follows that object extraction is not permitted. There is also the particular L1 influence of the constraint against extraction from DP Objects due to the absence of a specifier position in DP in the L1. Evidence that learners are able to overcome both the general and particular L1 influences suggests a possible interaction between linguistic input in the L2, the developing L2 grammar and UG principles. Thus, such evidence would support the argument that UG continues to be accessible to L2 learners.

Finally, the developmental route which is evidenced by Malay learners in production data may provide insights into acquisitional processes towards wh-movement. Zobl (1995:40) argues that uniformity of development among L2 learners indicates they make use of 'a common set of algorithms for deriving grammatical sub-systems from primary data.' Zobl's choice of the term 'algorithms' emphasises that L2 learners proceed along a universal series of stages in constructing a mental representation of a particular syntactic phenomenon.[1] According to this view, insofar as Malay learners demonstrate similar developmental patterns as has been observed in L1 and L2 acquisition of wh-movement, we may argue that they have access to the same

[1] Zobl (1995) contrasts algorithmic UG guided-acquisition against heuristic learning by trial and error which is not guided by UG.

source of knowledge. On the basis of the other forms of evidence discussed above, we take this common source of knowledge among first and second language learners to be UG.

The discussion which follows is structured according to the various forms of evidence described above. Section 1 argues that after the initial non-movement stage, Malay learners are able not only to reject UG violations but also to discriminate between violations of UG principles. Section 2 argues that Malay learners are able to discriminate between grammatical and ungrammatical wh-extraction. In Section 3, we argue that Malay learners are able to overcome the L1 influence against object extraction but not against extraction from DP Objects. In Section 4, we demonstrate that Malay learners follow a similar acquisitional route towards wh-movement as has been observed in L1 and L2 acquisition. In Section 5, we explore the role of lexical learning in the instantiation of matrix and embedded COMP for wh-movement. On the basis of these forms of evidence, we argue that Malay learners continue to have access to UG principles in the acquisition of wh-movement.

1 Differential Responses to Degrees of Ungrammaticality

1.1 Increase in the Unacceptability of Extraction from Relative Clauses, Adjuncts, Wh-Islands and Complex Noun Phrases

Learners at the low level generally accepted ungrammatical extraction from relative clauses, adjuncts, wh-islands and complex noun phrases and produced UG violations which involved extraction from these clauses. Thus, we may reject the null hypothesis that beginning learners will reject and avoid the production of Subjacency violations involving ungrammatical subject and object extraction from these constructions. With continued exposure to the L2, learners demonstrated a lower acceptance of these forms of ungrammatical extraction and produced fewer UG violations. Thus, we may reject the null hypothesis that advanced learners and native speakers of English will not reject these violations more determinately than beginning and intermediate learners. We may also reject the null hypothesis that advanced learners and native speakers will not produce more UG violations than beginning and intermediate learners. These results are consistent with the findings

of Bley Vroman, Ioup and Felix (1988) and Li (1992) who found that with continued exposure to the L2 learners were able to reject Subjacency violations at a level that was above chance.

The interpretation that we assign to the inability to reject Subjacency violations depends crucially on whether wh-movement has been acquired (cf. Martohardjono and Gair, 1992; White, 1992). More accurately, since Subjacency involves extraction from embedded clauses, it depends on evidence which relates to the acquisition of long-distance movement. If we can show that learners who are not able to reject Subjacency violations have acquired long-distance wh-movement, then this may indicate that UG is no longer accessible to the L2 learner since in natural languages, principles of UG constrain wh-movement. If however, there is evidence that suggests that long-distance movement has not been acquired, then the inability to reject Subjacency violations may simply be attributed to the irrelevance of UG principles which constrain wh-movement, such as Subjacency. As we shall see, the inability of low level learners to reject Subjacency violations may indeed be attributed to the fact that they have not acquired long-distance wh-movement, and therefore cannot be expected to recognise violations of principles which constrain wh-movement.

1.2 Differential Responses to Subjacency Violations

In conformity with prediction, low level learners are not able to discriminate between strong and weak Subjacency violations or between two weak Subjacency violations. Thus, we may reject the null hypothesis that beginning learners will reject strong Subjacency violations more markedly than weak Subjacency violations and reject the less weak of the two weak Subjacency violations more decisively than the weaker of the two violations. Mid- and high-level subjects who have begun the acquisitional process of wh-movement gave higher acceptability ratings to object extraction from complex noun phrases (weak Subjacency violation) than object extraction from relative clauses (strong Subjacency violation). Mid- and high-level subjects also produced more weak violations involving ungrammatical object extraction from wh-islands and complex noun phrases than strong violations involving relative clauses and adjuncts. Advanced level learners and native speakers

also produced a few weak violations but no strong violations.[2]

This differential acceptance and production of Subjacency violations can be accounted for within the acquisitional process that Martohardjono (1991) suggested for the establishment of barriers against ungrammatical wh-movement. It will be recalled that extraction from relative clauses and adjuncts involves crossing two invariant barriers while extraction from wh-islands and complex noun phrases involves crossing one invariant barrier and one variant barrier. Once wh-movement has begun to be acquired, we may assume that invariant barriers are already established since, by definition, these barriers are cross-linguistically similar. In contrast, variant barriers have to established either through parameter-resetting or lexical learning. Thus, the lower acceptance and production of strong Subjacency violations relative to the acceptance and production of weak Subjacency violations by learners at the mid and high levels can be accounted for in terms of the longer period that is needed to establish variant barriers. The ability of mid and high level learners to discriminate between strong violations (extraction from relative clauses) and weak violations (extraction from complex noun phrases) is consistent with the findings of Martohardjono (1991, 1993) and Li (1992). The production of only weak violations by native speakers who have already completed the acquisitional process may be attributed to the fact that there may be some idiolectal variation with regard to the acceptability of weak violations.

Mid and high level learners were also able to discriminate between two weak UG violations: they rated extraction from the weaker of the two violations, (extraction from complex noun phrases) as more acceptable than the less weak violation (extraction from wh-islands). This allows us to reject the null hypothesis that intermediate learners will not reject the less weak of two weak Subjacency violations more firmly than the weaker violation. This too may be accounted for by the acquisitional order predicted by Martohardjono (1991, 1993): it is easier to establish a variant barrier through parameterization than to determine the subcategorization properties of individual noun phrases on a piecemeal basis.

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[2] The results of advanced level learners are in conformity with the notion that production may lag behind acquired knowledge as manifested in the judgements obtained from these subjects. (cf. Sharwood Smith, 1986; White, 1991a).

Contrary to prediction, mid and high level learners gave lower ratings to object extraction from wh-islands (weak Subjacency violation) than extraction from adjuncts (strong Subjacency violation). This is possibly the result of L1 influence since the descriptive facts in Malay suggests that it does not allow questions with two wh-words as is the case in object extraction from wh-islands. However, at the advanced level, there are no significant differences between object extraction from wh-islands and adjuncts, suggesting that learners are able to overcome L1 influences and demonstrate a pattern of relative acceptability of ungrammatical sentences that is similar to that demonstrated by native speakers. In this respect, our findings are consistent with those of Martohardjono (1993) who found that Indonesian learners are able to overcome L1 influences with regard to the low acceptability of extraction from wh-islands and complex noun phrases in comparison to extraction from relative clauses and adjuncts.

In conformity with the prediction that once learners have arrived at a certain acquisitional stage, they reject all Subjacency violations strongly, advanced level learners do not discriminate between strong and weak violations or between two weak violations. This undifferentiated response to Subjacency violations is similar to that demonstrated by native speakers. Thus, we may reject the null hypothesis that advanced learners and native speakers will give lower acceptability ratings to strong Subjacency violations than weak Subjacency violations and reject the less weak of two Subjacency violations more firmly than the weak violation. These findings are consistent with Martohardjono's (1993) and Li's (1992). They support Martohardjono's suggestion that once the barriers against ungrammatical wh-movement have been established, a 'ceiling effect' comes into play so that learners do not discriminate between Subjacency violations according to the number and types of barriers crossed. There were no significant differences in the rejection rate of ungrammatical sentences by advanced learners and native speakers. This is consistent with Li's (1992) findings and those of White and Genesee (1995). This developmental pattern in which learners conform to UG-theoretic predictions in their acquisitional route towards wh-movement strongly suggests that L2 learners have gradual access to UG principles related to wh-movement.

1.3 Differential Responses to Ungrammatical Subject and Object Extraction

The Cumulative Effect Hypothesis formulated by Martohardjono (1991) predicted that learners would reject violations of two UG principles more strongly than violations of a single UG principle. Since subject extraction from relative clauses, adjuncts, wh-islands and complex noun phrases violates the principles of Subjacency and the ECP while object extraction from the same clauses violates only Subjacency, it was predicted that once learners had acquired wh-movement, they would more clearly reject ungrammatical subject extraction than ungrammatical object extraction from the same clause. With respect to extraction from adjuncts, we found that mid level learners conformed to prediction rejecting ungrammatical subject extraction more strongly than ungrammatical object extraction. As predicted, learners at low levels who have not acquired wh-movement are not able to discriminate between violation of a single UG principle and violations of two UG principles. At higher levels of proficiency, it appears that learners' rejection of the strong Subjacency violation is determinate enough to override the difference between responses to violation of the ECP and Subjacency and those to violation of only Subjacency.

With respect to complex noun phrases, differential responses to ungrammatical subject and object extraction was seen in subjects from all five levels. The differential response at each level may be accounted for if we recall that the variant barrier against extraction from complex noun phrases has to be established through the lengthy acquisitional process of determining whether or not individual noun phrases subcategorize for complements. In the absence of this barrier, object extraction from complex noun phrases would be grammatical within the context of the interlanguage grammar. However, even in the absence of this barrier, subject extraction from complex noun phrases would be ungrammatical since the subject trace is not properly governed, hence violating the ECP. This would account for the ability of even low level learners who may not have established variant barriers against extraction from complex noun phrases to discriminate between the two violations. Among those who have completed the acquisitional process, that is, native speakers and possibly advanced learners, it is possible that ungrammatical extraction from complex noun phrases constitute such weak violations of Subjacency in their grammar that they are sensitive to the violation of an additional principle, the ECP, in ungrammatical subject extraction.

Turning to ungrammatical extraction from relative clauses, we did not find any significant difference between the responses to ungrammatical subject and object extraction at any level. The ability to discriminate between a single UG principle and violations of two UG principles may have been over-ridden by rejection of the strong Subjacency violation at each level. Finally, with respect to extraction from wh-islands, the lack of differentiated response to subject and object extraction by Malay learners may be attributed to the L1 constraints against wh-questions with two wh-elements. These constraints may influence learners into strongly rejecting these violations without discriminating between the two.

Thus, the ability of subjects to discriminate between violations of one and two UG principles was influenced by the strength of the Subjacency violation and the possible influence of the L1. Thus, we may not completely reject our null hypothesis that intermediate learners will not reject violations of two UG principles more strongly than violations of a single UG principle. The partial ability of subjects to discriminate between violations of a single UG principle and violations of two UG principles in the rating task is supported by the results of the production task: more violations were produced involving object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases than subject extraction from the same constructions by subjects at each of the five levels. It is also supported by the results of the ranking task in which subjects at the low and mid levels ranked ungrammatical object extraction from relative clauses more highly than ungrammatical subject extraction from the same clause. The convergence of differentiated responses to violations of one and two UG principles in the three tasks strongly points towards the continued accessibility of UG.

1.4 Discrimination between Strong and Weak UG violations

The ability to discriminate between strong and weak UG violations was also seen in the higher rejection of extraction from CP and DP subjects (strong violations) than 'that-trace effects' (weak violations) at the advanced and native speaker level. Thus, we may reject our null hypothesis that advanced learners and native speakers will not reject extraction from CP and DP subjects more strongly than 'that trace effects.' Additionally, we found that with increasing exposure to the L2, learners rejected extraction from CP and DP subjects more decisively. However, there were no

significant differences in the rejection rate of 'that-trace effects' among learners at various levels of proficiency or between advanced level learners and native speakers. The differential treatment of ungrammatical extraction from CP and DP subjects and 'that-trace effects' may be accounted for by the invariant barriers involved in the former which present a contrast to parametric variation in the elements which constitute proper governors of subject trace. This ability to discriminate between strong UG and weak UG violations was supported by the results of the production task in which learners at the high, advanced and native speaker levels produced more sentences with 'that-trace effects' than violations involving extraction from CP and DP subjects. This differential response to strong and weak UG violations provides further support for our argument that UG principles related to wh-movement continue to be accessible to Malay L2 learners.

1.5 Effect of Version

Generally, Malay learners who performed version one of the experimental tasks in which the rating task was administered first (designated as RTF subjects) rated ungrammatical sentences lower than those who performed version two of the tasks in which the rating task was administered last (designated as RTL subjects). It is possible that RTL subjects were able to parse the ungrammatical sentences with greater ease than RTF subjects since they had already received input of long-distance movement in the preceding tasks. It is likely that the increase ease in parsing may have influenced RTL subjects into rating ungrammatical sentences higher than RTF subjects. Interestingly, subjects at high levels of proficiency appear to be particularly susceptible to the effect of version in their rating of ungrammatical extraction from CP and DP subjects and 'that-trace effects'. We suggest that is it is possible that subjects at higher levels of proficiency may benefit more from linguistic input which they have recently received in parsing long-distance wh-movement than subjects at lower proficiency levels.

2 Discrimination between Grammatical and Ungrammatical Extraction

2.1 'That-trace effects' and its Grammatical Equivalent

Learners at each of the four levels of proficiency and native speakers did not discriminate between 'that-trace effects' and its grammatical equivalent in the rating task. Thus, we may reject our null hypothesis that learners and native speakers will reject 'that-trace effects' more strongly than the grammatical equivalent. It will be recalled that in Chapter 3, we argued that while 'that-trace effects' are not allowed in Malay, this was attributed to the violation of the Generalized Control Rule rather than the ECP, since contraints on wh-movement at S-structure do not apply in Malay. Thus, on acquiring wh-movement for the L2, Malay learners are dependent on evidence from the input to realise the proper governor of subject trace. They may have obtained positive evidence that embedded subject extraction in the absence of a complementizer is grammatical but not obtained evidence that embedded subject extraction in its presence is grammatical, hence their inability to reject 'that trace effects.' The responses by native speakers are consistent with the idiolectal variation which has been observed in the literature in relation to 'that-trace effects' (Sobin, 1987; White, 1986).

In the ranking task, the ability to discriminate between 'that-trace effects' and its grammatical equivalent is not clearly demonstrated by learners at the low, mid and high levels but exhibited by advanced learners. All the twenty one native speakers also ranked the grammatical extraction over the ungrammatical one. Thus, we may reject our null hypothesis that beginning learners will rank 'that-trace effects' significantly lower than their grammatical equivalent. We may also reject our null hypothesis that advanced learners and native speakers will not prefer grammatical embedded subject extraction in the absence of an overt complementizer to 'that-trace effects'. This clearly shows that although advanced learners and native speakers may *accept* 'that-trace effects' they clearly *prefer* the grammatical equivalent (cf. White, Travis and Maclachlan, 1993). In the production task, there was no clear developmental trend among learners. Almost 25% of native speakers produced 'that-trace effects' in conformity with the finding that there is idiolectal variation with regard to the proper governor of embedded subject trace.

2.2 Ungrammatical Extraction from Relative Clauses, Adjuncts, Wh-islands and Complex Noun Phrases and their Grammatical Equivalents

There is a clear developmental trend in the ability of learners to rank grammatical subject and object extraction over ungrammatical extraction from these constructions: at the low and mid level, learners do not always rank grammatical extraction over the ungrammatical one but at the high, advanced and native speaker level, subjects show significant differences between grammatical subject extraction and ungrammatical subject extraction and between grammatical object extraction and ungrammatical object extraction. Thus, we may not completely reject our null hypothesis that beginning learners will discriminate between grammatical and ungrammatical wh-extraction. However, we may reject our null hypothesis that advanced learners and native speakers will not discriminate between the two. The preference for the grammatical over the ungrammatical with continued exposure to the L2 suggests that access to UG principles spans a time period in which there is interaction of linguistic input, the developing L2 grammar and UG-derived knowledge. This provides further support for the continued accessibility of UG principles.

Additionally, we found that the ability of low and mid level learners to discriminate between ungrammatical extraction from the above constructions and their grammatical equivalents varied according to the strength of the Subjacency violation involved. Generally, these subjects are better able to rank grammatical extraction higher than ungrammatical extraction from relative clauses and adjuncts (involving invariant barriers) than wh-islands and complex noun phrases (involving variant barriers). These findings are in accord with the acquisitional process discussed above in which once wh-movement has been acquired, invariant barriers against wh-movement from relative clauses and adjuncts do not need to be established but variant barriers against extraction from wh-islands and complex noun phrases do. Since the invariant barriers are already established against relative clauses and adjuncts, low and mid level learners are generally able to discriminate between grammatical extraction and ungrammatical extraction from these clauses. Since the same learners may not have established the variant barriers against wh-movement, they find difficulty in discriminating between ungrammatical extraction from wh-islands and complex noun phrases and their grammatical equivalents. Once the variant barriers have been established through parameter-resetting (against

extraction from wh-islands) or lexical learning of the subcategorization properties of noun phrases (against extraction from complex noun phrases), learners are able to discriminate between grammatical extraction and ungrammatical extraction from these clauses. The differential ability to discriminate between grammatical and ungrammatical wh-movement in accord with an acquisitional order which is predicted by UG further supports the argument that wh-movement in the L2 is acquired through the continued accessibility of UG.

2.3 Ungrammatical Extraction from DP Subjects, Grammatical Extraction of DP Subjects and Grammatical Extraction from DP Objects

There was a clear developmental trend in the ability of learners to significantly rank grammatical extraction of DP Subjects above ungrammatical extraction from DP Subjects, with continued exposure to the L2. This allows us to reject our null hypothesis that beginning learners will prefer grammatical extraction of DP Subjects over ungrammatical extraction from DP Subjects. The difficulty encountered by beginning learners in recognising the grammaticality of DP Subject extraction over ungrammatical extraction from DP Subjects may be attributed to the fact that the Condition on the Domain of Extraction does not apply in grammars in which wh-movement is not present. Additionally, they would have received positive evidence of grammatical subject extraction in the input but they would not have received evidence that extraction from DP Subjects is not permitted in English, hence the difficulty they face in discriminating between the two. However, advanced learners and native speakers clearly prefer grammatical extraction of DP Subjects over ungrammatical extraction from DP Subjects, allowing us to reject our null hypothesis that they will not discriminate between the two. This preference suggests that the Condition on Extraction Domains applies in the grammar of these subjects which in turn implies that wh-movement has been acquired through the continued accessibility of UG principles.

However, learners at all levels were able to significantly rank grammatical extraction from DP Objects above ungrammatical extraction from DP Subjects. Thus, we may not reject our null hypothesis that beginning learners will not be able to discriminate between the two. This suggests that beginning learners may already be alert to positive evidence of extraction from DP Objects in English in the input which

enables them to overcome the L1 influence against this extraction-type. We may also reject our null hypothesis that advanced learners and native speakers will not discriminate between grammatical extraction from DP Objects and ungrammatical extraction from DP Subjects. Given that extraction from DPs either in subject or object position is not permitted in Malay, the ability of learners at all levels to discriminate between grammatical and ungrammatical domains of extraction strongly suggests that direct accessibility to UG principles may override L1 influences.

2.4 Extraction from CP Subjects and CP Objects

However, Malay learners, even those at advanced levels, have difficulty in ranking grammatical extraction from CP Objects over ungrammatical extraction from CP Subjects. Thus, we are not able to reject our null hypothesis that advanced learners will not prefer the grammatical extraction over the ungrammatical one. This may be due to the fact that the Condition on the Domain of Extraction does not fully apply in these grammars. Positive evidence of grammatical extraction from CP Objects involving long-distance movement may not be readily available which may account for the inability of learners to discriminate between grammatical and ungrammatical extraction from CPs. Another possible explanation may be that Malay learners may be treating the lexical item 'that' in the lexicalizations 'What was that Mary lost widely known' or 'What was that Steven won known by no one' as equivalent to the head of the relative clause in the cleft questions which are permitted in Malay: this would influence them into perceiving ungrammatical extraction from CP Subjects as grammatical, which would account for their difficulty in discriminating between ungrammatical extraction from CP Subjects and grammatical extraction from CP Objects.

3 Relative Acceptability of Grammatical Extraction

In this section, we discuss the relative acceptability of local and long-distance wh-movement in turn, beginning with local wh-movement.

3.1 Extraction-Type in Simple Sentences

We start by examining the relative acceptability of grammatical subject extraction, object extraction and extraction from DP Objects in simple sentences across levels. We also compare the relative acceptability of these three extraction-types at each level.

3.1.1 Acceptability of Extraction-Type across subject levels

Learners at various levels of proficiency gave high acceptability ratings to subject extraction in simple sentences, without any significant differences across levels. This is in conformity with the prediction that learners would not face difficulty with subject extraction even at the lowest levels of proficiency since there is no L1 constraint against subject extraction. Thus, we may reject our null hypothesis that beginning learners will not accept subject extraction in simple sentences. Learners at various levels of proficiency also did not differ in the rating given to object extraction in simple sentences. This is contrary to the prediction that beginning learners would be influenced by the L1 constraint against object extraction and disallows us from rejecting our null hypothesis that they would not be. This suggests that Malay learners are able to overcome the L1 influence against object extraction, possibly due to the ready availability of object extraction in the input. This implies that unlike the subjects in Martohardjono and Gair's (1992) study, Malay learners may not be treating the empty category as pro. [3]

In contrast to the acceptability of subject and object extraction in simple sentences by learners at each of the four levels, there is a developmental trend towards lower acceptability of extraction from DP Objects in simple sentences with increased

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[3] Alternatively, it provides further evidence against the universal constraint against object pro. We have already discussed White's argument against the universal constraint against object pro in Chapter 2, Section 5.2.1.2

exposure to the L2. Thus, we may not reject our null hypothesis that learners will not find extraction from DP Objects increasingly acceptable with increased exposure to the L2. Additionally, we found that advanced level learners rated these sentences significantly lower than native speakers. The high acceptance of extraction from DP Objects in simple sentences among beginning learners may be reflective of indeterminacy. Learners at higher levels of proficiency may demonstrate a low acceptance rate due to their inability to overcome an interaction between the universal constraint against pro in object position and the language specific constraint against extraction from DP Objects due to the absence of a specifier position in DP. We also found that native speakers who performed the rating task last in the series of experimental tasks gave significantly higher ratings to extraction from DP Objects than those who did it first. This suggests that even native speakers may not find these extraction-types completely acceptable and may be influenced by input which they have recently received into accepting these grammatical sentences more highly.

The data obtained from the production task also shows that the increase in the production of target responses for subject and object extraction with increased exposure to the L2 is significant. This presents a contrast to the results of the rating task in which there were no significant differences between subject and object extraction in simple sentences with continued exposure to the L2. This provides further evidence that acquired knowledge as manifested in the acceptance of these grammatical sentences precedes the ability to produce the same sentences. However, there was no increase in the production of extraction from DP Objects with continued exposure to the L2, which is consistent with the results obtained for this extraction-type from the rating task.

3.1.2 Relative Acceptability of Extraction-Type at each level

Learners at all four levels did not rate subject extraction as significantly more acceptable than object extraction in simple sentences. This is contrary to the prediction that learners would be influenced by the L1 constraint against object extraction. Thus, we may not reject our null hypothesis that beginning learners will not rate subject extraction more highly than object extraction in simple sentences. However, learners at each of the four levels rated extraction from DP Objects

significantly lower than subject and object extraction in simple sentences. This allows us to reject our null hypothesis that beginning learners would not accept subject and object extraction more highly than extraction from DP Objects in simple sentences. However, it does not allow us to reject our null hypothesis that advanced learners would not accept subject and object extraction more highly than extraction from DP Objects in simple sentences. The obvious explanation for this may have resided in the constraints against extraction from DP Objects for Malay learners which we described in Section 3.1.1. However, since native speakers too rated subject and object extraction significantly higher than extraction from DP Objects, this extraction-type may have a lower grammatical status relative to subject and object extraction in simple sentences which is independent of developmental considerations.

In the ranking task, subjects at each of the five levels showed a clear preference for object extraction over extraction from DP Objects. Thus, the results obtained from the ranking task support the results of the rating task in suggesting that learners are not able to overcome the constraints against extraction from DP Objects in simple sentences. However, since native speaker subjects too ranked object extraction over extraction from DP Objects, the suggestion we have already made that the latter has a lower grammatical status than the former is further supported.

In the production task, a higher percentage of target responses was produced for subject extraction in simple sentences than object extraction at the low and mid levels. These results present a contrast to the results of the rating task in which subjects at all levels did not rate subject extraction significantly higher than object extraction. However, this contrast may largely be accounted for by the production of the inappropriate auxiliary by beginning subjects, that is, 'be', which resulted in non-target responses. The results suggests that while learners do not have difficulty overcoming the L1 constraint against object extraction at the level of acceptance, lexical learning of the appropriate auxiliary delays the production of target responses for object extraction in simple sentences.

The results of the production task also support those of the rating task in that a higher percentage of target responses for subject and object extraction is produced at each level in comparison to extraction from DP Objects. The performance of

native speakers in the production task is also consistent with their performance in the rating task: the majority of native speakers produced the target responses for subject and object extraction in simple sentences but just over a third of the subjects produced extraction from DP Objects in simple sentences, suggesting that it may not be the preferred response.

To summarise, the convergence of evidence from the rating, ranking and production tasks clearly confirm the lower grammaticality status of extraction from DP Objects relative to object extraction. Additionally, the converging evidence from the rating and production tasks suggests the lower acceptability of extraction from DP Objects relative to subject extraction. However, the fact that advanced-level subjects rated extraction from DP Objects in simple sentences significantly lower than native speaker subjects suggests that learners may additionally be influenced by L1 constraints against this extraction-type.

3.2 Extraction-Type in Embedded Sentences

In this section, we discuss the acceptability of grammatical subject and object extraction and extraction from DP Objects in embedded sentences across the five levels of subjects. We also discuss the relative acceptability of these extraction-types at each of the subject levels.

3.2.1 Acceptability of Extraction-Type across subject levels

Learners from various levels of proficiency did not differ in the rating they assigned to embedded subject extraction. Thus, we are able to reject our null hypothesis that beginning learners would find embedded subject extraction less acceptable than advanced learners. However, subjects who performed the rating task last (RTL subjects) at the mid, high and advanced levels rated embedded subject extraction significantly higher than those who performed the rating task first (RTF subjects) at the same levels. Although the developmental trend with regard to the acceptability of embedded subject extraction displayed by RTF and RTL subjects is similar, this suggests that subjects who performed the rating task last may be influenced by the input of embedded subject extraction in the ranking task into more highly accepting these sentences. No significant differences were found in the rating of embedded

subject extraction between advanced-level subjects and native speakers, which is consistent with the prediction that these sentences would not pose a problem for Malay learners of English.

In contrast, with embedded object extraction, RTF subjects produced an apparently different developmental trend from RTL subjects. RTF subjects showed a pattern of decreasing acceptability of embedded object extraction with continued exposure to the L2; advanced level learners rated these sentences significantly lower than native speakers, contrary to prediction. In contrast, RTL subjects demonstrated a pattern of increasing acceptability with continued exposure to the L2 and advanced level learners did not differ from native speakers in the acceptability of these sentences.

The higher rate of rejection of embedded object extraction by RTF subjects may be attributed to their inability to overcome the two L1 constraints against embedded object extraction- the constraint against extraction from a CP in object position within a main clause and the constraint against object extraction within the CP- under the time constraints of the rating task. In contrast, RTL subjects had not only the benefit of more time to access metalinguistic knowledge relevant to wh-questions during the ranking and production tasks but also the advantage of being presented with two lexicalizations of the test item in the ranking task. This is likely to have had two consequences. Firstly, this may have enabled them to recognise the mismatch between their interlanguage grammar and the target grammar with respect to this grammatical construction. Secondly, being exposed to embedded object extraction before being faced with it in the rating task would have facilitated the parsing of such sentences. In other words, RTL subjects may have been 'primed' into judging embedded object extraction as more acceptable than RTF subjects. (cf. Lefkowitz and Hedgecock, 1992).

The developmental pattern for extraction from DP Objects in embedded sentences tends towards rejection with increased exposure to the L2; this is the case with both RTF and RTL subjects. Advanced level RTF and RTL subjects both rated these sentences significantly lower than native speakers. This is contrary to the prediction that with increased exposure to the L2, learners will find these sentences more acceptable. Thus, we are unable to reject our null hypothesis that with continued exposure to the L2, learners will not find extraction from DP Objects in embedded

sentences more acceptable. It also suggests that the relatively high acceptance of this sentence type at the low and mid levels may be due to indeterminacy. It appears that learners are not able to overcome the three L1 constraints against this construction: extraction from object position in a CP Object, extraction from CP Object in a main clause and extraction from DP in the absence of a specifier. Unlike the case of embedded object extraction, even RTL subjects who had encountered lexicalizations of extraction from DP Objects in simple and embedded sentences in the ranking task were not able to overcome the L1 constraints against extraction from DP Objects in embedded sentences.

However, the rating of RTL subjects at the advanced and native speaker levels is significantly higher than the rating of RTF subjects at the same levels for extraction from DP Objects in embedded sentences. It appears that subjects at higher levels of proficiency may be more susceptible to the 'priming' effect of the tasks which they have already performed than beginning learners. This may be due to the greater degree of metalinguistic awareness possessed by subjects at higher levels of proficiency than those at lower levels (cf. Bohme, 1983 cited in Birdsong, 1989). Alternatively, as has already been suggested in Section 2.5, learners at higher levels of proficiency may benefit more than learners at lower levels of proficiency from the linguistic input which they have received in the ability to parse long-distance wh-movement.

The results of the production task support the results of the rating task: with continued exposure to the L2, there is a significant increase in the production of embedded subject and object extraction. Almost all native speakers produced the target responses for embedded subject and object extraction. As with extraction from DP Objects in simple sentences, few target responses for extraction from DP Objects in embedded sentences were produced by learners and native speakers, and there is no clear developmental trend. The low production of extraction from DP Objects in embedded sentences by native speakers contributes further evidence to the lower grammatical status of extraction from DP Objects relative to subject and object extraction in embedded sentences.

3.2.2 Relative Acceptability of Extraction-Type at each level

Comparing the rating judgements for embedded subject and object extraction, no significant differences were found between learners and native speakers. The results obtained from the learners is in conformity with the prediction that the L1 influence on object extraction would counteract the bias against embedded subject extraction due to processing constraints so that learners do not discriminate between embedded subject and object extraction. However, the results for native speakers are contrary to the prediction that they would demonstrate a bias against embedded subject extraction due to processing constraints. This is in contrast to the findings of Schachter and Yip (1990) who found that learners and native speakers rated grammatical embedded object extraction significantly higher than grammatical embedded subject extraction. We are unable to account for the contrast in the results obtained.[4]

With regard to the acceptability of the three extraction-types, low and mid level learners did not show any significant differences. This may be attributed to indeterminacy in the grammar with regard to long-distance movement in general. In contrast, high, advanced and native speaker subjects rated subject and object extraction significantly higher than extraction from DP Objects in embedded sentences. The relatively low rating of extraction from DP Objects in embedded sentences by native speakers suggests that as with extraction from DP Objects in simple sentences, these sentences may have a marginal grammatical status which is independent of developmental considerations.

In the production task, low and mid level learners produced a higher percentage of short questions for embedded object extraction than embedded subject extraction, suggesting that learners had more difficulty producing long-distance movement involving object extraction than subject extraction. This presents a contrast to the results of the rating task in which subjects did not rate long-distance movement involving subject extraction higher than long-distance movement involving object extraction. This may be traced to the difficulty in overcoming L1 constraints against

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[4] One potential explanation may have resided in the length of time given to parse each isolated sentence. However, Schachter and Yip do not state that their questionnaire was timed so we have to discount this possible explanation.

object extraction from CP Objects. However, at higher levels of proficiency, learners appeared to overcome this difficulty in producing embedded object extraction. Learners at all levels also faced more difficulty producing sentences with extraction from DP Objects in embedded sentences than embedded subject and object extraction. Only a third of the native speaker subjects produced extraction from DP Objects in embedded sentences, strengthening the suggestion made in Section 3.1.2 for simple sentences that this extraction-type may have a low grammaticality status.

In the ranking task, the responses to the relative acceptability of grammatical sentences from CP Objects show that learners did not significantly rank embedded subject or passive subject extraction over embedded object extraction. This suggests that they are able to overcome the L1 influence against object extraction. However, the results show that at each level, there are significant differences in the ranks assigned to subject extraction over extraction from DP Objects.[5] In contrast, although native speakers demonstrated a higher acceptance of embedded subject and object extraction than extraction from DP Objects and produced more sentences involving embedded subject and object extraction than extraction from DP Objects, they did not show a preference for the latter over the former. Here, it is worth making the distinction between *acceptance* and *preference*. The latter implies a more deliberate conscious decision than the former. Thus, at the conscious (possibly metalinguistic level), native speakers do not *prefer* extraction from DP Objects over subject and object extraction although at the unconscious (possibly intuitive level), they *accept* subject and object extraction more highly than extraction from DP Objects. In contrast, learners both accept and prefer embedded subject and object extraction to extraction from DP Objects in embedded clauses. This difference in the responses between learners and native speakers is consistent with the lower grammaticality status of extraction from DP Objects relative to subject and object extraction as well as the possibility that learners may be additionally influenced by L1 constraints against extraction from DP Objects.

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[5] Advanced learners ranked subject, object and passive subject extraction significantly higher than extraction from DP Objects in one lexicalization but not in the other.

3.3 Level of Embedding

Subject and object extraction in simple sentences was generally rated significantly higher than embedded subject and object extraction by learners at all four levels of proficiency and by native speakers. This is in accord with the learnability principle of continuity (Quintero, 1992; O' Grady, 1987): learners appear to find it easier to move subject and object wh-elements within a single clause than from an embedded clause to the initial position of the main clause. However, since native speakers too rated extraction from simple sentences higher than the same extraction-type in embedded sentences, the lower ratings of embedded subject and object extraction may not be attributable solely to the acquisitional process. It is likely that embedded subject and object extraction poses a greater processing load than subject and object extraction in simple sentences, manifesting itself in the lower acceptability of embedded subject and object extraction by subjects at all levels. These findings are consistent with Schachter and Yip (1990) who found that the acceptance of grammatical extraction by native speakers decreased as the level of embedding increased.

In contrast, learners at all levels did not rate extraction from DP Objects in simple sentences significantly higher than extraction from DP Objects in embedded sentences. The lack of difference in the rating between extraction from DP Objects in simple and embedded sentences in the initial stages may be due to indeterminacy with regard to the grammaticality of both the sentence-types. With continued exposure to the L2, learners appear to form determinate judgements which reject both these sentences, without discriminating between the level of embedding in the two sentence-types. The rejection of extraction from DP Objects is similar to that evidenced by Malagasy learners in White, Travis and Maclachlan's (1993) study. Malagasy, like Malay, does not have a specifier position in DP. This suggests that L2 learners find it difficult to overcome this L1 constraint against extraction from DP Objects. In contrast, native speakers rated extraction from DP Objects in simple sentences significantly higher than the same extraction-type in embedded sentences. As with the discrimination which native speakers demonstrated with regard to the level of embedding for subject and object extraction, this may be due to the heavier processing load presented by long-distance movement than local movement.

The results of the production task showed that at the low and mid levels, subjects

produced a higher percentage of sentences with subject and object extraction from simple sentences than from embedded clauses. At the high, advanced and native speaker levels, there was little difference in the production of subject and object extraction within the same clause than from an embedded clauses. This suggests that beginning learners take longer to produce grammatical long-distance movement than local movement, providing support for the learnability principle of cumulative development (Quintero, 1992; O' Grady, 1987). These results also strongly support the suggestion made above that the lower acceptance of subject and object extraction in simple sentences than embedded sentences by high, advanced and native speaker subjects in the rating task may be due to the greater processing load involved in long-distance wh-movement than local wh-movement.

In contrast, out of the small number of sentences with extraction from DP Objects that was produced by learners, mid- and high-level subjects produced only a few more sentences involving extraction from DP Objects in simple sentences than in embedded sentences. High and advanced level learners produced almost the same number of responses involving extraction from DP Objects in simple and embedded sentences and there was no difference in the production of this extraction-type in simple and embedded sentences among native speakers. This suggests that the factor of extraction-type rather than level of embedding may restrict the production of extraction from DP Objects in embedded sentences among high and advanced level learners and native speakers.

4 Putatative Developmental Patterns in the Production Data

The purpose of the exploratory study was to study the developmental patterns produced by learners from a particular L1 background in the course of acquiring wh-movement. We will discuss the developmental patterns observed in terms of three stages:-

(a) an early non-movement stage
(b) a transitional stage
(c) the acquisition of local and long-distance movement

We stress that these three stages are not discrete; instead, there is considerable

overlap, particularly between the first and second stages. This is consistent with a picture of interlanguage development in which the optionality permitted by UG with regard to +/- movement is expressed until the target grammar has been acquired: some learners may have two ways of generating wh questions, by wh-movement or by base generation, as is permitted in Korean and Japanese (White, 1992). Other learners may generate wh-questions either by movement or base-generation. At the high level, there is a sharp fall in the production of non-target language forms and a sudden increase in target language forms. This is also consistent with an interlanguage scenario in which the grammar is suddenly 'restructured'.

In Chapter 2, we noted Ellis' (1994) distinction between strong and weak evidence for a sequence, in which strong evidence for a sequence consists of evidence that certain constructions are commonly produced by L2 learners while weak evidence consists of evidence that certain constructions are produced by L2 learners from a particular L1 background. We shall see that the production data consists mostly of constructions which are commonly produced by L2 learners but that there are a few constructions which appear to be characteristic of learners whose L1 is Malay.

4.1 The Early Non-Movement Stage

4.1.1 The Production of UG violations

Learners at the low level produced a higher percentage of UG violations involving subject and object extraction from relative clauses, adjuncts, wh-islands and complex noun phrases than learners at higher levels of proficiency and native speakers. They also produced a higher percentage of UG violations involving extraction from CP and DP subjects than learners at higher levels of proficiency. This suggests that beginning learners are not constrained by UG principles which are relevant to wh-movement. The most obvious explanation for their non-conformity to these principles is their lack of relevance to a grammar in which wh-movement has not been acquired.

4.1.2 Uninverted structures

Contributory evidence that wh-questions produced at this stage are generated in the absence of movement is the predominance of uninverted structures, for example

'What Karen likes?'. In Chapter 2, we noted that the production of such uninverted structures is a common phenomenon in L1 and L2 acquisition of wh-movement. We saw that these uninverted structures may be accounted for by adjunction of a base-generated wh-element to sentence initial position, perhaps before learners have perceived the presence of subject auxiliary inversion in wh-questions. Uninverted structures may also be accounted for by the possible presence of null auxiliaries which may be either moved from INFL or base-generated. If we maintain with Demuth (1992) that movement may only be licensed once null elements have been replaced by phonological material, then it follows that the licensing of wh-movement is dependent on the filling of matrix COMP at the level of PF. Variation in the production of wh-questions involving inversion and, by implication, involving movement, may then be traced to whether individual learners are what Demuth calls 'slot-fillers', that is, whether they fill matrix COMP with phonological elements.

4.1.3 'Be forms'

Another predominant structure that was produced by low and mid level learners was the 'be form', as in 'What is Karen like?' or 'What is Rosnah hope that Zaid will buy?' or 'What is Mrs. Lim hope has gone to school?'. In Chapter 2, we discussed the possibility that in such forms, the empty category may not be trace as in the target language but a null constant which is typically produced in the absence of movement and bound to a clause-external discourse binder.

Since the discourse binder is found in the shared knowledge of the speaker and the addressee, such forms may be more commonly produced when the L1 allows cleft questions which consist of a relative clause-like structure and a copular clause in a subject predicate relationship as is permitted in Malay. Such cleft questions not only share a syntactic similarity with the null constant chain in the presence of the 'be' auxiliary but also crucially depend on discourse elements in the shared knowledge of speaker and addressee. Since the production of 'be forms' are a well-documented phenomenon in the acquisition of L1 and L2 wh-movement, the production of 'be forms' by Malay learners may be an instance of a common acquisitional feature made more predominant due to the prevalence of cleft questions in the L1.

4.1.4 Null Prep

Another indicator that wh-movement has not been acquired during this stage is the production of 'null prep' in sentences requiring extraction from DP Objects, particularly by low and mid level learners. In Chapter 2, we described this as the phenomenon in which learners omit the production of the preposition in questions or relative clauses requiring either preposition stranding or pied-piping although they demonstrate knowledge of the subcategorization properties of the relevant verbs and their prepositional complements. For example, where the target response is 'What does Mary like boys with?' to elicit 'long hair', low level learners commonly produced the response 'What does Mary like boys?' In Chapter 2, it was noted that the production of such forms are a common developmental feature in the acquisition of preposition-stranding and pied-piping and have been taken to be indicative of an early non-movement stage. Since we did not test subcategorization properties of the relevant verbs and their complements, we cannot rule out the possibility that the occurrence of 'null prep' may reflect learners' inaccurate knowledge of these properties. However, given that the DP Objects out of which extraction was tested consisted of common lexical items, that is 'boys with long hair' and 'films about animals', this appears unlikely.

4.1.5 Short Questions

The production of short questions where long-distance movement involving either subject or object extraction or extraction from DP Objects in embedded clauses is required suggests that learners are not able to produce long-distance movement. For example, where the target response is 'Who does Mrs. Lim hope has gone to school?' which involves long-distance movement of the embedded subject, learners at the low and mid levels commonly produced sentences with local object extraction such as 'What Mrs. Lim hope?', 'What is Mrs. Lim hope?' or 'What does Mrs. Lim hopes?'.[6] Even more strongly indicative that long-distance movement has not been acquired are sentences in which the wh-element for subject extraction is used such as 'Who is Mrs. Lim hopes?'.

[6] It will be noted that in addition to target language short questions, the interlanguage characteristics of uninverted structures and `be' forms are also produced in short questions where long distance movement is required.

It has already been noted in Chapter 2, that while short questions may be generated in the absence of movement, it is not possible to generate long-distance questions in the absence of movement. It will be recalled that three possible identities for the empty category in wh-questions are null pronominal (Martohardjono and Gair, 1992; de Villiers, Roeper and Vainikka, 1990; Nishigauchi and Roeper, 1987), null resumptive pro (White, 1992) and null constant (Penner, 1994). However, if the empty category in an embedded clause is a null pronominal, according to Principle B, there would be coreference relations between the wh-element, the subject of the embedded clause and the empty category which would not yield the correct interpretation to the sentence. Neither is it possible for the empty category in an embedded clause in wh-questions to be a null constant since it cannot be licensed by an antecedent in the discourse. The only possible identity for the empty category in the embedded clause then is that of wh-trace. Accordingly, it would follow that learners can only produce long-distance movement once they have realised that the relationship between the empty category and the wh-element is that of a trace which is linked to its coindexed antecedent. Thus, short questions may be produced by beginning learners as a means of coping with the demands of the task before wh-movement has been acquired.

4.1.6 Individual variation

Individual variation appears to be most extensive at the low level as evidenced by the number of wh-questions which can only be grouped under the category of 'others'. This suggests that learners who do not have access to UG principles which are relevant to wh-movement resort to individual compensatory strategies to cope with the demands of the task, unlike learners at higher levels of proficiency who are guided by UG constraints. Lack of access to UG principles may be attributed to the fact that at least some learners may not have acquired wh-movement.

4.1.7 Other Indicators of Non-Movement

Another indicator that wh-movement has not been acquired is the production of resumptive pronouns, as in 'Who is Mrs. Lim hopes that he went to school?' where the resumptive pronoun 'he' fills the site of the potential gap. As was noted in Chapter 2, the production of resumptive pronouns in relative clauses (which are also

generated by wh-movement) is well-documented in the literature. Yet another indicator of the absence of movement is the absence of gaps as in 'What Mrs.Lim hopes the Steven went to school?' (where the target response is 'Who does Mrs. Lim hope went to school?'). Wh-in-situ questions are also produced by a few learners for example, 'Mrs. Lim hopes that who went to school?' The findings from this study are consistent with White, Spada, Lightbrown and Ranta 's (1991) study which found that wh-in-situ questions are not a common means of producing wh-questions even when these questions are permitted in the L1 rather than Tang's (1990) study which found that they are. Given that apart from cleft questions, wh-insitu questions are the only means of questioning the object in simple and embedded clauses in Malay, it would appear that these L2 learners are particularly resistant to this obvious means of forming wh-questions. This may be due to the ready availability of target language wh-questions with wh-elements in sentence-initial position where they are particularly salient.

4.1.8 Supporting Evidence from Judgement Tasks

The evidence of an early non-movement stage in the production data is supported by the results of the judgement tests for low level learners. It will be recalled that low level learners showed a high acceptance of the Subjacency violations tested. Generally, they were also not able to discriminate between Subjacency violations based on the strength of the violation, between sentences which violated one UG principle and those which violated two UG principles and between grammatical and ungrammatical wh-extraction. We may interpret this lack of conformity to UG principles which are relevant to wh-movement by the irrelevance of these principles to a grammar in which wh-movement is not present. Since Malay learners have knowledge of more than one empty category in their L1 (Chapter 3, Section 3), beginning learners may not be treating the empty category in English wh-questions as wh-trace which is subject to Subjacency and the ECP.

4.2 The Transitional Stage

4.2.1 Continued Production of 'Be forms'

The continued production of uninverted structures and 'be forms' at the mid stage suggests that progress to the production of target language local wh-movement is

gradual. The decrease in the production of uninverted structures and the increase in the production of 'be forms' at the mid level in object extraction in simple and embedded sentences and embedded subject extraction suggests that at least in some cases, the 'be form' may replace the uninverted structure, possibly after subject-auxiliary inversion has been perceived. 'Be forms' may continue to be produced until learners have learnt the appropriate choice of auxiliary that is, the use of 'do' support. There also appear to be a few cases of overgeneralization where 'be forms' are produced in response to the stimulus requiring subject extraction in simple sentences, for example 'Who is like to play football?.'

Although it has been suggested in Section 4.1.8 that 'be forms' may originate as part of null constant chains in the absence of wh-movement, its predominance in questions in which the wh-element is clearly referential suggests that it continues to be produced by learners after COMP has been instantiated for movement. The high acceptance of local object extraction with 'do' support in the rating task even among low level learners suggests that some learners at this stage may already have identified the appropriate auxiliary but that productive control of the auxiliary may be delayed.

As was noted in Chapter 2, the delay of 'do' support at the level of production is well-documented in the L1 and L2 acquisition literature of wh-movement. This may be accounted for if we consider the fact that learners not only have to identify the appropriate auxiliary which satisfies the licensing conditions between Specifier and head of COMP but also discover the categorial site from which it originates as well as its destination. This may be a gradual process for three reasons: firstly, the auxiliary is devoid of semantic meaning, secondly, it occupies an unstressed position and thirdly, the paucity of agreement features in English makes it difficult for learners to identify Specifier-Head agreement. Thus, it is not surprising that the appropriate filler of matrix COMP is usually not produced early in the acquisition of wh-movement. However, if we recall Demuth's (1992) distinction between 'identification' and 'realization' of lexical items and her argument that syntactic restructuring is only dependent on the former and not the latter, then the late realization of 'do' support in production data does not rule out the possibility that local wh-movement may already have been instantiated for the L2 while 'be' occupies COMP position.

4.2.2 Continued Production of Short Questions

Another indicator that learners are not able to produce long-distance wh-movement is the continued production of short questions at the mid and high levels. Ellis (1994) asserts that we can claim that learners are avoiding a particular structure if they do not produce this structure while there is evidence that they 'know' the structure and that native speakers would produce the same structure in the same context. According to this view, in order to argue that the continued production of short questions is a means of avoiding long-distance questions, we need to provide evidence that learners 'know' long-distance movement and that native speakers produce long-distance in the same context. If we take 'knowledge' of long-distance movement to include the ability to discriminate between grammatical and ungrammatical wh-movement, to reject violations of principles relevant to wh-movement, to discriminate between Subjacency violations of varying degrees, to discriminate between violations of one and two UG principles and to accept long-distance movement, then there there is ample evidence of the first sort in the results of mid and high level learners in the judgement tasks. Evidence of the second sort, that native speakers would produce the same structure in the same context, is readily found in the responses of the majority of native speakers to the stimuli which aimed to elicit embedded subject and object extraction. These forms of evidence strongly substantiate our argument that short questions continue to be produced as a means of avoiding long-distance movement.[7]

4.2.3 Transitional Prepositional Phrase Movement

Some low and mid level learners produced constructions in which the preposition was present but in which it had been moved to pre-subject position. These may be transitional constructions produced while learners are in the process of acquiring

[7] In Chapter Two, Section 5.2.3, we noted that in the literature of first language acquisition of wh-movement, other constructions in which long distance movement is not involved have been noted, namely wh-copying and medial wh-questions. The former were only produced twice by subjects in this study: `What does Jim know what film Sue likes to watch?' and `What did Jim know about what films that Sue likes to watch?' The latter was only produced by a single low level subject:- `What Mrs. Lim hopes who went to school?' However, in view of the commonalities which have been observed in L1 and L2 acquisition of wh-movement, evidence of the occurrence of such questions in L1 acquisition of wh-movement is suggestive that L2 learners have more UG options available to them than those that are permitted by the L1 or the target grammar.

pied-piping, in which the preposition is also moved to sentence initial position. Other learners produced non-target forms of preposition-stranding in which the head of the DP Objects ('films') is moved as in 'What kind of film does Jim know Sue likes to watch about?' or 'What does Jim know of films that Sue likes to watch about?' Where extraction from DP Objects in embedded sentences is required, mid- and high-level subjects produced constructions in which the preposition appears to have been moved to embedded Spec, CP position as in 'What does Jim know about films that Sue likes?' or 'What is Jim know about that Sue likes to watch films?'. Constructions such as these provide clear evidence that learners have realised the presence of an escape hatch in embedded Spec, CP position. Such constructions also clearly indicate that 'that' has been accurately categorised as filler of embedded COMP.

Four points are worth making in the light of the variability which was found in response to stimuli requiring extraction from DP Objects. Firstly, learners clearly progress from the initial null prep stage. Secondly, some learners appear to explore various alternatives of prepositional phrase extraction. Some of this alternatives may be the result of confusion arising from the types of prepositional phrases extraction which English allows, pied-piping and preposition-stranding as well as movement to embedded Spec, CP position. Thirdly, the extent of variability which stimuli requiring extraction from DP Objects elicits in comparison to stimuli requiring subject or object extraction suggests that learners face difficulty in overcoming the L1 constraints against extraction from DP Objects. The last point is that in view of the lower acceptance of extraction from DP Objects than subject and object extraction by native speakers discussed in Section 3.1.2, the extent of variability in the responses produced may be due to the possibility that prepositional phrase extraction may belong to the periphery of UG rather than the core: if so, this would account for the range of individual responses produced by learners and native speakers to comply with the demands of the task.

4.2.4 Late Emergence of Lexical Complementizer

The avoidance of long-distance movement among mid and high level learners may be linked to the late realization of the complementizer 'that' which fills embedded COMP position at the phonological level. In Chapter 2, we noted that the late

acquisition of the lexical complementizer was a common feature in the development of CP in L1 and L2 acquisition. We also noted in Chapter 3, that in Malay, the L1 of the subjects in this study, the presence of the tensed complementizer 'bahawa' is obligatory for subordinated clauses. Thus, it appears that even when the L2 learner has knowledge of the obligatoriness of complementizers from the L1, this knowledge is not transferred to the L2. Thus, the acquisitional characteristic of late emergence of complementizers appears to override the influence of L1 knowledge. This is in conformity with the findings of Lakshmanan and Selinker (1994) who found that their L2 learners omitted the lexical complementizer in embedded clauses although it was obligatory in their L1.

The late emergence of the complementizer may be traced to the difficulty which learners face in categorising this lexical item. In Chapter 9, we observed that some learners appeared to misanalyse complementizers as prepositions. This misanalysis of complementizers as prepositions was also noted by Meisel and Muller (1992) who argue that it contributes to the late emergence of complementizers. This illustrates the possibility that the realization of lexical complementizers at the level of PF may be dependent on its categorial identification as filler of embedded COMP.

4.2.5 Movement within Embedded Clause

Other transitional constructions which suggest that learners may not be able to produce long-distance questions are wh-constructions which involve wh-movement within the embedded clause such as 'Jim knows what film Sue likes to watch?' or 'Jim knows what Sue likes to watch?'. These constructions allow learners to conform to the instructions of the task to use as many of the words in the stimulus as possible. These constructions are similar to those found by de Villiers, Roeper and Vainikka (1990) who observed that in the first phase of child language acquisition of movement from the initial non-movement stage, children can only move a wh-phrase within an embedded clause. A variation of this strategy is local movement within the embedded clause and fronting of embedded clauses so that the wh-element occupies sentence initial position. Examples which illustrate this are 'Who went to school when Mrs. Lim hopes?' (target response: 'Who does Mrs. Lim hope went to school?'), 'What is Zaid buy that Rosnah hopes' (target response: 'What does Rosnah hope that Zaid will buy?') or 'What did Sue likes to watch films

about that Jim knows?' (target response: 'What does Jim know that Sue likes to watch films about?)'.[8]

2.6 Production of Relativized Clauses

In questions which require extraction from DP Objects in embedded clauses, a common strategy was the production of relativized clauses. Examples of such relativized clauses are 'What kind of films that Sue likes to watch which Jim knows?' and 'What films is Sue like that Jim knows?' The production of these constructions in which the embedded clause is fronted enables learners to cope with the demands of the task by using local movement within the matrix clause. This strategy of movement within the matrix clause coincides with the second phase of development from non-movement to long-distance movement noted by de Villiers, Roeper and Vainikka (1990) in child language acquisition. The production of relativized constructions before long-distance movement is also consistent with the observation that when lexical complementizers first occur, they appear in relative clauses (Lakshmanan and Selinker, 1994).

Cleft-like constructions are also common in extraction from DP Objects in simple sentences. A common response where the target response was 'What does Mary like boys with?' was 'What kind of boys that Mary likes?' which was produced by learners at all four levels of proficiency but most often at the mid level. One possibility is that the lexical item 'that' may have been inappropriately produced instead of the auxiliary 'does'. However, in view of our finding that 'that' is not substituted for 'does' in response to stimuli requiring embedded subject extraction or object extraction in simple sentences or from embedded clauses, this possibility may be ruled out. This seems to suggest that it is the nature of the particular stimuli which is responsible for the production of 'that'. This may be attributed to the requirement of the stimuli to extract only part of a DP as opposed to the whole DP as in stimuli requiring subject and object extraction. Learners who do not have the ability to produce prepositional extraction either in the form of pied-piping or

[8] Another variation of this strategy was the formation of a wh-in-situ question in the embedded clause which is moved to sentence initial position as in `Sue likes to watch films about what that Jim knows?'

preposition-stranding may attempt to focus the elicited element. In this regard, we may suspect the influence of the L1, especially since such constructions have not been reported in the L1 or L2 acquisition literature on wh-movement. It will be recalled that in Malay, questions which appear to have been generated by movement are in fact cleft questions which consist of a relativized clause and a copular clause existing in a subject predicate relationship. Thus, in the above constructions, 'that' may function as a relative pronoun.

Supporting the argument that L1 influence may be at work in the production of these constructions is the fact that this construction is most commonly produced at the mid level where one would expect L2 learners who are beginning to acquire wh-movement to try to maximise knowledge in the L2 by drawing on syntactic strategies which are employed in the L1 (cf. Ard and Gass 1983). However, it is important not to overlook the fact that the production of such constructions may also be influenced by the transfer of functional discourse strategies from the L1 into the L2 (cf. Muysken, 1984; Schmidt, 1980), in this case, the discourse function of focusing in Malay (see Chapter 3, Section 3.2). Additionally, the argument that Malay learners focus the elicited element where extraction from DP Objects is required is strengthened by the production of cleft questions by other learners, for example, 'What a boys are Mary likes?' and 'What is the boy that Mary likes?' It is also supported by the production of focus questions such as 'Films about what Jim knows that Sue likes to watch?', 'Films about what that Jim knows Sue likes to watch?' or 'Films about what does Jim know that Sue likes most?' by some learners.

4.2.7 Other Transitional Constructions

Other transitional constructions which suggest that learners are not able to produce long-distance movement are adjoined or conjoined structures. For example, in 'What did Rosita do will Zaid buy flowers?' local object extraction is adjoined to a yes-no question. In 'What is Zaid will buy and who hopes their?', local object and subject extraction are conjoined.

4.2.8 Supporting Evidence from Judgement Tasks

The judgement data from the mid level support the evidence in the production data that long-distance movement is beginning to be acquired. It is at this level that learners most clearly discriminate between strong and weak Subjacency violations, in keeping with Martohardjono's finding that in the early acquisition of wh-movement, barriers against strong violations are established before barriers against weak violations. They also discriminated between ungrammatical and grammatical wh-extraction and between violations of two UG principles and violations of a single UG principle, in conformity with UG-theoretic predictions. Thus, the picture that is sketched of progress from an early non-movement stage to the gradual production of long-distance movement is mirrored by evidence in the judgement data of gradual access to UG principles.

4.3 The Acquisition of Target Language Local and Long-Distance Movement

4.3.1 Production of Target Forms

At the advanced level, the transition to the acquisition of local and long-distance movement appears to be almost complete: there is a sharp decrease in the production of sentences involving UG violations and the majority of learners at this level produced the target forms for local subject and object extraction and embedded subject and object extraction. Only a small percentage of uninverted forms, 'be forms' and short questions were produced. Evidence of non-movement such as resumptive pronouns and the absence of gaps are completely absent although a few learners produced 'null prep'.

However, the production of target responses to stimuli requiring extraction from DP Objects in simple and embedded sentences (which would have resulted in preposition-stranding) by subjects even at the advanced level was small. However, only a third of the control group produced such responses. As has already been suggested, factors other than purely developmental factors may inhibit the production of such sentences. The continued production of 'that-trace effects' at the advanced level suggests that learners have not realised what constitutes proper governors of subject traces. About 25% of the native speakers tested also produced 'that-trace effects', adding to the extensive evidence in the literature of idiolectal variation with respect to this phenomenon.

4.3.2 Support from Judgement Tasks

The results of the judgement task confirm the evidence in the production data that at the advanced level, acquisition of local and long-distance movement is almost complete. Subjects at these levels are generally able to discriminate between grammatical and ungrammatical extraction. They also strongly reject all UG violations, without discriminating between violations of two UG principles and violation of a single UG principle, between strong and weak Subjacency violations or between two weak Subjacency violations. This is in conformity with Martohardjono's findings that at a certain stage in the acquisition of wh-movement, a 'ceiling effect' is reached which disallows discrimination between forms of ungrammatical extraction. Advanced level learners also show little evidence of being influenced by L1 constraints in grammatical wh-movement except with regard to their rejection and low production of preposition-stranding.

Advanced learners like native speakers demonstrate a high acceptance of 'that-trace effects' in the rating task; however, like native speakers, they show a preference for the grammatical equivalent in the ranking task. In fact, among the twenty one native speakers tested, this preference is unanimous; this finding is noteworthy given the substantial evidence that many native speakers accept 'that-trace effects' (Sobin, 1987; White, 1988, White, Travis and Maclachlan, 1993). These findings corroborate those of White et al who found that although advanced learners and native speakers accept 'that-trace effects', they prefer its grammatical equivalent.

The difficulty that learners face in rejecting 'that-trace effects' and accepting preposition-stranding may both be associated with the inability of learners to determine what constitutes proper governors of traces. The continued acceptance of 'that-trace effects' may be attributed to learners' inability to recognise the proper governor of subject traces in embedded clauses. However, since native speakers too demonstrate idiolectal variation with respect to the acceptance of 'that-trace effects', we conclude with White, Travis et al, that this behaviour conforms to UG. With respect to preposition-stranding, learners may not realise that in English, certain prepositions have 'verb-like' features in their ability to assign case and properly govern traces (Kayne, 1984). However, given that English is one of the few languages in which preposition stranding is permitted (Van Riemsdjik, 1978; Hornstein and Weinberg, 1981) and that native speakers demonstrate a low

acceptance of preposition-stranding and produce few such sentences, we may safely assume that the behaviour of Malay learners in this respect is also well within the bounds of UG. Thus, our findings support those White and Genesee's (1995) findings that near-native speakers and native speakers are similar in their responses to ungrammatical wh-movement but are in conflict with their findings that they are also similar with respect to their responses to grammatical wh-movement.

The interlanguage constructions which are produced by Malay learners at different levels of proficiency is also consistent with an interlanguage scenario in which learners begin producing wh-questions which are not generated by movement, produce local movement and then long-distance movement (Li, 1992). The production of wh-movement by at least some Malay learners of English thus appears to proceed on an implicational basis. This does not rule out the possibility that local and long-distance movement may be acquired simultaneously once the learner identifies the empty category as wh-trace and not pro or null constant.

The production data of Malay learners is also largely in conformity with the developmental patterns which are produced by L2 learners from other L1 backgrounds and L1 learners: the earliest wh-questions are characterised by diagnostics of non-movement such as null prep, the absence of extraction and resumptive pronouns; with respect to sentence initial position, uninverted forms are produced, followed by 'be forms'; 'do' support and the lexical complementizer emerge late and the same patterns are observed in the gradual progression towards the production of long-distance wh-movement as in L1 acquisition. This supports our argument that the same knowledge source in L1 acquisition continues to be accessible to Malay L2 learners of English, that is UG.

5 The Role of Lexical Learning in the Instantiation of Functional Categories for Movement

In Chapter 2, we discussed the controversy over whether lexical learning of the items which occupy the head position of functional categories precedes the instantiation of functional categories or whether functional categories are instantiated for the L2 prior to the acquisition of lexical items. In the discussion

above, the late emergence of 'do support' which fills matrix COMP and the lexical complementizer which fills embedded COMP was noted: mid level learners continued to produce 'be forms' and uninverted structures where local movement was required and short questions where the stimulus aimed to elicit long-distance movement. It is only at the high level that there is a sudden decrease in the percentage of non-target wh-questions and short questions produced and a concomitant increase in target language forms for local and long-distance wh-movement. The point at issue is whether the late emergence of the lexical items which fill matrix and embedded COMP hinders the instantiation of CP for movement. We will begin by considering the instantiation of matrix COMP for local movement and then go on to consider the instantiation of embedded COMP for long-distance movement.

5.1 Local Movement

In Chapter 9, we noted that the percentage production of uninverted structures and 'be forms' by subjects at the low and mid levels in response to stimuli requiring embedded subject extraction, object extraction in simple sentences and embedded object extraction allows for the possibility that 'be forms' may replace uninverted structures. However, at this stage, the wh-element does not appear to be analysed as occupying Spec, CP position since the licensing conditions between the Specifier of CP and the head of CP are not fulfilled. Thus, in the initial stages, wh-elements may be adjoined to sentence initial position in accordance with the view that 'adjoin-alpha' is a primary acquisition capacity' (Lebeaux, 1990 cited in Roeper, 1992). In this position, the wh-element can assign scope to the sentence and allow the learner to carry out the illocutionary function of interrogation. The adjunction of the wh-element to Spec, IP position is consistent with the existence of null constants since according to Rizzi (1994), null constants may exist when the specifier of a root is in A-position. Uninverted structures may therefore be generated in the absence of movement.

At a later stage, 'be forms' appear to replace uninverted forms. There are two possibilities for the appearance of 'be forms'. The first possibility is that 'be forms' constitute part of null constant chains in which case, the wh-questions are not generated by movement. In this account, the null constant chains in 'be forms' differ

from the uninverted structures produced earlier only in the overt presence of the copula, 'be'. Since complement sentences in Malay lack an overt copula, it is not surprising that it is not produced by beginning learners. The wh-elements in these sentences remain adjoined to Spec, IP position.

The other possibility is that the auxiliary 'be' is moved from INFL to COMP. In this account, the wh-element occupies Spec, CP position but lexical learning of the appropriate item which fills matrix COMP has not been completed. The filling of Spec, CP position by the wh-element rules out the presence of null constants since according to Rizzi (1994), null constants may not exist when the specifier of the root is in A' position. According to this account then, 'be forms' are generated by movement. While lexical learning is in progress, the learner produces the copula which had not been overtly manifested in the uninverted structures. However, we cannot infer from the production of the inappropriate auxiliary that the learner has not realised that Spec, CP is licensed by COMP. Instead, what can be reasonably inferred is that the learner has not achieved productive accuracy of the appropriate auxiliary which licenses Spec, CP.

It is possible that in some learners, the 'be forms' may not be generated by wh-movement while in other learners, they may. It is also possible that learners may pass through a stage in which they sometimes generate 'be forms' by movement and sometimes by non-movement (cf. White, 1992). A third possibility is that the 'be form' may first be generated by non-movement and then by movement. In the final stage, the learner achieves productive accuracy of the appropriate auxiliary which fills matrix COMP and produces target language local movement.

5.2 Long-Distance Movement

Several learners at the low and mid levels produced wh-questions in which the wh-element is coindexed to an empty category in the embedded clause. Following from our observation that the empty category in an embedded clause which is coindexed to a wh-element can only be trace (unlike short questions in which the empty category may be pro), the absence of the lexical complementizer in such questions suggests that embedded CP may be instantiated for long-distance wh-movement prior to the production of the complementizer. However, since the wh-element has

to move from embedded clause to sentence initial position through the escape hatch in embedded Spec, CP position, categorial identification of embedded COMP and its specifier appears necessary. Evidence to support the necessity for categorial identification comes from the misanalysis of the lexical complementizer as the preposition in short questions: learners appear unable to produce long-distance movement while the complementizer is incorrectly analysed. Thus, it appears that CP may be instantiated for long-distance movement once learners have categorially identified the appropriate lexical item as complementizer although it is not accurately realized at the level of production.

It is possible that prior to the production of the lexical complementizer in long-distance questions, null elements may occupy embedded COMP position. These may later be optionally replaced by phonological material in embedded object extraction. The input which the learner receives in this respect is potentially confusing: in embedded subject extraction, the presence of complementizers gives rise to 'that-trace effects' while in embedded object extraction, the presence of the overt complementizer is optional. In the face of such conflicting evidence, learners may choose to retain the null element.

Some learners produced long-distance questions in which matrix COMP position is either phonologically empty or occupied by 'be' or some other auxiliary and embedded COMP position is not filled. Examples are given below:-

(a) What Rosnah hope Zaid will buy?
(b) What is Rosnah hope Zaid will buy?
(c) Who has Mrs. Lim hopes will went to school?

These questions suggests that long-distance movement may be produced before matrix COMP is filled by the appropriate auxiliary and embedded COMP by the lexical complementizer at the level of PF.

5.3 Absence of Wh-Movement

Another means of studying the role of lexical learning in the instantiation of COMP for movement is by studying questions in which there are indicators of non-movement. Four such questions are given below. In (a) and (c), gaps are absent

while in (b) and (d), resumptive pronouns fill potential gap sites.

(a) What Mrs Lim hopes the Steven went to school?
(b) Who is Mrs. Lim hopes that he went to school?
(c) Who does Mary like boys with long hair?
(d) Who did Mrs. Lim hopes that he went to school?

In (a), the items which fill matrix and embedded COMP are absent, in (b), matrix COMP is inappropriately filled while embedded COMP is incorrectly filled resulting in 'that-trace effects', in (c), the appropriate auxiliary occupies matrix COMP position and in (d) both matrix and embedded COMP are accurately filled. These questions provide evidence that the absence of wh-movement may be associated with the absence of the lexical items which fill matrix and embedded COMP as in (a), or the inappropriate occupation of matrix and embedded COMP, as in (b). However, (c) illustrates that learners may be able to produce the appropriate item in matrix COMP but not be able to produce local movement. Finally, (d) shows that learners may be able to fill both matrix and embedded COMP accurately but still not be able to produce long-distance wh-movement.

Maintaining the view that null prep is diagnostic of non-movement, we next examine constructions in which this occurs to study the role of lexical learning of the items which fill matrix and embedded COMP.

(a) What Mary likes the boys?
(b) What is Mary like boys?
(c) What hair was Mary like the boys?
(d) What does Mary like boys?
(e) What is Sue like to watch films?
(f) What Jim knows that Sue likes to watch films?
(g) What is Jim knows that Sue likes to watch films about?
(h) What does Jim know that Sue likes to watch films?

The constructions in (d) and (h) show us that null prep occurs when matrix COMP is appropriately filled while the constructions in (a, b, c, e, f and g) show us that it also occurs when it is not. Null prep also occurs in constructions in which embedded COMP is appropriately filled, as in (f, g and h) and in constructions in which both matrix and embedded COMP are appropriately filled, as in (h). This provides us with further evidence that the production of the items which fill matrix and

embedded COMP does not necessarily imply that CP has been instantiated for movement.

To summarise this section, our study shows that most learners begin generating wh-questions in the absence of movement by the adjunction of the wh-element to sentence initial position, possibly to Spec, IP position. At a later stage, these uninverted structures are replaced by 'be forms' which may or may not be generated by movement. In wh-questions which are not generated by movement, the copula forms part of the null constant chain while where there is movement, 'be' occupies matrix COMP position. During the third stage, matrix COMP is phonologically realized by the appropriate auxiliary and target language local wh-movement is produced. Long-distance movement is produced by learners both in the presence and absence of the lexical complementizer. Thus, our study suggests that L2 learners may produce wh-questions which are generated by movement in the absence of the appropriate lexical items which fill matrix COMP and embedded COMP at the level of PF. Additionally, our study suggests that the production of the appropriate items in matrix and embedded COMP does not imply that CP has already been instantiated for wh-movement. What appears to be crucial for the acquisition of local movement is the categorial identification of the lexical items which fill matrix COMP while long-distance movement is dependent on the categorial identification of the items which fill embedded COMP.

6 Summary

The picture which emerges from the discussion of the various forms of evidence above is one in which UG continues to be accessible to the Malay L2 learner in the acquisition of wh-movement in English. Overall, with continued exposure to the L2, learners reject UG violations more strongly than at the initial stages. Additionally, learners who have begun the acquisition of wh-movement are able to discriminate between strong and weak violations of Subjacency in favour of the latter. They also favour violations of only Subjacency as opposed to violations of both Subjacency and the ECP. The ability to reject UG violations in accordance with UG theoretic predictions strongly implies that learners who are beginning to acquire wh-movement have access to UG principles. Advanced level learners, like native

speakers who have completed the acquisitional process, strongly reject UG violations without discriminating between them. This suggests that once learners have reached a certain stage in the acquisition of wh-movement, presumably once the barriers against ungrammatical extraction have been firmly established, a 'ceiling effect' comes into play. Generally, advanced level learners reject UG violations as strongly as native speakers, suggesting that they are as firmly guided by knowledge of UG principles as native speakers.

Malay learners are also generally able to discriminate between grammatical and ungrammatical wh-extraction. This discriminative ability is limited among low level learners but becomes clearer with increased exposure to the L2. Although Malay learners may receive positive evidence on grammatical wh-extraction in English, they do not receive evidence on the domains in which wh-extraction is not permitted. Thus, learners have to draw on other knowledge sources besides linguistic input to discriminate between grammatical and ungrammatical wh-movement. Since wh-movement is not instantiated in the L1, we may be confident that this potential source of knowledge is not available to Malay learners. Thus, we may argue that the ability to discriminate between grammatical and ungrammatical extraction is drawn from continued accessibility to UG principles.

Malay learners are also able to overcome the general L1 influence against wh-movement: hence they do not perceive the empty category in object extraction to be pro. With continued exposure to the L2, they are able to accept and produce local and long-distance movement involving subject and object extraction. Like native speakers, they do not demonstrate a preference for object extraction over subject extraction. However, Malay learners are not able to overcome the L1 constraint against extraction from DP Objects but since the evidence from native speakers suggests that this extraction-type is relatively less acceptable than subject and object extraction, this may also be attributed to non-developmental factors. One of these factors may be typological markedness since preposition-stranding which is involved in extraction from DP Objects, is rare in natural languages. The ability to overcome at least some L1 influences points to the continued accessibility of UG principles.

Finally, the production data of Malay learners largely conforms to the developmental patterns produced by L2 learners from other L1 backgrounds and L1

learners. Thus, in Ellis' (1994) terms, we may conclude that the production data obtained provide strong evidence for a sequence in the acquisition of wh-movement although certain constructions may be traced to the influence of focus-fronting as a discoursal strategy in Malay. This suggests that Malay learners are guided by the same knowledge source as other L2 learners in the acquisition of wh-movement, which on the basis of the other forms of evidence above, we argue is UG.

Chapter 11

Conclusions

Introduction

In the last chapter we discussed our results, arguing that the convergence of evidence from the three tasks strongly suggests that UG continues to be accessible to the Malay learner of English in the acquisition of wh-movement. In this chapter, we consider the significance of our study within the broader context of issues which are connected to the accessibility of Universal Grammar to L2 learners.

1 Accessibility of Universal Grammar to L2 Learners

1.1 Conformity to UG Principles within a Developmental Perspective

This study aimed to examine the accessibility of UG to a particular group of L2 learners with reference to the acquisition of a particular syntactic phenomenon, wh-movement. Knowledge of UG principles relevant to wh-movement was studied within the context of a developmental study of the acquisition of wh-movement. This was particularly important for studying the accessibility of principles relevant to wh-movement since learners may not conform to UG principles if they are not relevant to the grammar, most obviously, if wh-movement has not been acquired.

This appears to be the case with the low level learners in our study who showed a high acceptance of Subjacency and ECP violations. If we had investigated conformity to Subjacency or the ECP principles in isolation as a means of studying the accessibility of UG principles, we may have been erroneously led to the conclusion that low level learners did not have access to UG principles. Instead, since we have considered conformity to UG principles within a developmental context, we are able to draw on various forms of evidence which suggest that low level learners have not acquired wh-movement and thus do not apply UG principles which are related to wh-movement.

One importance source of evidence was the rating given to the three extraction-types of long-distance movement in the rating task: these sentences were neither strongly accepted nor rejected, which is suggestive of some indeterminacy in the

grammar with regard to long-distance movement. We also found that low level learners faced difficulty in discriminating between grammatical and ungrammatical long-distance wh-extraction. This evidence was supported by indicators of non-movement in the wh-questions produced and the production of short questions in response to stimuli requiring long-distance movement. These forms of evidence converge to suggest that low level learners have not acquired long-distance wh-movement. In the absence of long-distance movement, the inability of low level learners to demonstrate knowledge of UG principles such as Subjacency and the ECP, the extent to which Subjacency is violated and whether one or two UG principles are violated may be more accurately attributed to the lack of relevance of these principles to the grammar, rather than to their inaccessibility.

Our study also demonstrated that when L2 learners began to acquire wh-movement, they not only rejected UG violations but also rejected them according to the predicted acquisitional order which was based on UG theory: they rejected violations which involved movement across invariant barriers more decisively than those which involved movement across barriers which had to be established for the L2. This indicates that their acquisition of wh-movement is constrained by UG principles. Moreover, the pattern of rejection of UG violations in the judgements of advanced level learners was generally similar to that exhibited by native speakers, suggesting that with continued exposure to the L2, learners observe the same UG constraints on wh-movement as native speakers. Our study thus underscores the importance of studying conformity to UG principles within the developmental context.

1.2 Differentiated Responses to Subjacency and ECP Violations within a Developmental Perspective

Our study found that differentiated responses with respect to the strength with which Subjacency is violated, and whether one or two UG principles were violated, were only found among mid and high level learners. It appears likely that low and advanced level learners were generally not able to discriminate between these UG violations for different reasons: since our evidence suggests that low level learners have not acquired wh-movement, principles related to wh-movement may not apply; advanced level learners, on the other hand may have established the barriers

against ungrammatical wh-movement so firmly that they rejected all violations strongly without discriminating between them. Martohardjono describes the 'ceiling effect' evidenced by advanced learners and the differentiated responses of intermediate learners to UG violations in her (1991) study but does not include beginning learners in this study.

Since our study involves a cross-sectional investigation involving learners from four proficiency levels, we are able to reveal an acquisitional process which has not been discovered before, in which low and advanced level learners are similar in not responding to the strength with which UG principles related to wh-movement are violated. The progress from the undifferentiated acceptance of low level learners to the differentiated rejection of intermediate learners to the undifferentiated rejection of advanced learners with regard to UG violations reflects an acquisitional order in which UG principles become gradually accessible to L2 learners. In low level learners, the undifferentiated acceptance of low level learners may reflect the indeterminate state of their knowledge with respect to wh-movement, particularly long-distance movement. This contrasts with the undifferentiated rejection of advanced learners which may reflect determinate judgements against UG violations arising from a steady or near-steady state of knowledge.

1.3 Role of the L1 in Judgements of UG Violations

Research which studies the accessibility of UG principles to the L2 learner has usually concentrated on learners whose L1 does not instantiate the UG principles tested in order to rule out the L1 as a source of knowledge (Bley Vroman, Felix and Ioup, 1988; Schachter, 1989; Martohardjono, 1991, 1993). Indeed, the selection of Malay learners to examine the accessibility of UG principles which are relevant to wh-movement in the present study was largely motivated by the fact that Malay does not instantiate wh-movement. However, the influence of the L1 may still manifest itself in learners' judgements of UG violations. This is clearly seen in at least two instances in the results obtained.

The first instance is the lower rating which mid and high level learners assigned to object extraction from wh-islands (weak Subjacency violation) than object extraction from adjuncts (strong Subjacency violation). We have already discussed

the possibility that this may be due to the influence of the L1 which disallows the occurrence of two wh-elements in a single sentence. However, the ability of advanced Malay learners to overcome the influence of L1 knowledge in conformity with UG principles suggests that UG continues to be accessible to the L2 learner apart from its instantiation in the L1.

The other instance in which the L1 exerts its influence in the judgement of UG violations is seen in the difficulty that even advanced learners face in consistently ranking grammatical extraction from CP Objects above ungrammatical extraction from CP Subjects. This presents a contrast to the ability of learners from all levels to rank grammatical extraction from DP Objects significantly higher than ungrammatical extraction from DP Subjects. Since extraction from CP and DP subjects both constitute violations of the Condition on Extraction Domains, we need to account for the ability of learners to discriminate between ungrammatical and grammatical extraction involving DPs but not CPs. Two possible explanations, both of which rely on the influence of the L1, may satisfactorily account for this.

For the first account, recall that extraction from DPs is not permitted in the L1 since in Malay, DPs do not have a specifier position. Thus, low level learners who may not have acquired wh-movement and knowledge of the Condition on Extraction Domains may be influenced by L1 knowledge of the absence of specifier positions in DPs which inhibits movement from DPs. The same learners may have obtained positive evidence of the permissibility of extraction from DP Objects in English, which involves either preposition-stranding or pied-piping. Thus, the combined factors of the influence of the L1 constraint against extraction from DPs and positive evidence of extraction from DP Objects in English would account for the ability of even low level learners to discriminate between grammatical extraction from DP Objects and ungrammatical extraction from DP Subjects. In this case, L1 knowledge appears to facilitate learners' ability to discriminate between grammatical and ungrammatical extraction from DPs. In contrast, since there is no constraint against extraction from CPs in the L1, the Malay learner has to rely solely on her knowledge of the Condition on Extraction Domains to discriminate between grammatical and ungrammatical extraction from CPs. Moreover, positive evidence of grammatical extraction from CP Objects which involves long-distance movement may not be so readily available, which would add to the difficulty which Malay

learners would encounter in this instance.

Another possible explanation which may account for the difficulty in recognising extraction from CP Subjects as ungrammatical may be due to learners' treatment of the lexical item 'that' in the lexicalizations for extraction from CP Subjects as the L1 equivalent of the head of the relative clause which is found in cleft sentences in Malay. This may influence learners into treating these constructions as cleft sentences and lead them to prefer ungrammatical extraction from CP Subjects over grammatical wh-extraction from CP Objects. In this case, L1 knowledge may inhibit learners' ability to discriminate between grammatical and ungrammatical wh-extraction. Thus, we can see that although Malay learners may not be able to draw directly on the L1 for knowledge of UG principles, the L1 may still affect the judgements of these learners.

1.4 Conformity to UG during Developmental Stages

The issue of whether or not, non-conformity to UG in the developmental stages of the interlanguage exists is a controversial one. Researchers who have found behaviour which they interpret as non-conformist to UG principles have used this to support the argument that UG is no longer accessible to the L2 learner (Schachter, 1989; Clahsen and Muysken, 1986). Other researchers (Martohardjono and Gair, 1992; White, 1992) have cautioned that apparent non-conformity to UG principles does not necessarily imply that UG principles are no longer accessible; these researchers provide evidence that what may be construed to be non-conformist behaviour may in fact be consistent with a natural grammar in which movement does not apply, and to which certain UG principles bear no relevance. Yet another point of view is that it is eminently possible that in the restructuring process of the interlanguage towards the target language, there may be certain points during which the interlanguage exhibits aberrant behaviour with respect to UG (Sharwood Smith, 1988a, 1988b). From this last perspective, evidence of non-conformity to UG does not necessarily imply that UG is no longer accessible to the L2 learner. Indeed, as Sharwood Smith (1988a, 1988b) and Klein (1995) argue, the progress of the interlanguage beyond intermittent non-conformity to UG may constitute evidence for the role of an active UG.

In the last chapter, we noted that low and mid level learners frequently produced 'null prep' in response to stimuli which required them to strand prepositions. The occurrence of 'null prep' in wh-questions has recently been argued by Klein (1995) to fall outside the bounds permitted by UG in natural languages. Here it is important to point out, as Klein herself does, that the supposed illicitness of 'null prep' in wh-questions is an empirical question: the discovery of a single language which permits 'null prep' in wh-questions would invalidate her claim that it is not permitted by UG. If, however, we set this empirical matter aside, we are faced with evidence that L2 learners do not consistently conform to UG. However, similar to the learners in Klein's study, Malay learners progress beyond the production of 'null prep' to the production of constructions in which the prepositional phrase is extracted, albeit sometimes in non-target language forms. Thus, our study contributes evidence of the ability of L2 learners to progress beyond so-called 'wild grammars' to reconfigure their interlanguage in conformity with UG, suggesting the continued accessibility of UG principles.

1.5 Strong and Weak Evidence for a Sequence in the Acquisition of Wh-movement

We have found that the acquisitional path of Malay learners as evidenced in the production data conforms to developmental patterns of L1 and L2 acquisition of wh-movement in the literature: they begin by producing early uninverted structures followed by 'be forms' ; 'do' support and the lexical complementizer emerge relatively late and local movement is produced (either within the matrix or embedded clause) before long-distance movement. Recalling Ellis' (1994) distinction between 'strong' and 'weak' evidence for a sequence, we are thus able to contribute 'strong' evidence for a sequence: we have demonstrated that Malay learners follow the same acquisitional route as other L2 learners.

However, we have also seen that Malay learners demonstrate acquisitional features which have not been discussed in the literature. This include the production of relativized, cleft and focus-fronted questions which may be traced to the influence of focus-fronting in the L1. This provides 'weak' evidence for a sequence in that Malay learners demonstrate acquisitional features which are common to learners from a particular L1 background. The discoursal influence of focus-fronting in the interlanguage of learners in whose L1s it is a prominent feature is an area in which

much fruitful research may be undertaken.

1.6 The Nature of Change

In Chapter 2, we noted that there are two broad views with respect to the nature of change in the interlanguage, that change may be sudden or gradual. Our study demonstrates that learners do not establish the barriers against ungrammatical wh-extraction at the same time. Instead, they establish these barriers in the following order: firstly, invariant barriers will precede variant barriers; secondly, for variant barriers, those which are parameterized will precede those which involve lexical-learning. This gradual conformity with the constraints expressed by Subjacency is mirrored in learners' ability to accurately produce local movement followed by long-distance wh-movement. However, this does not rule out the possibility that at the level of acceptance, local and long-distance movement may be 'triggered' simultaneously, possibly once learners realise that the empty category in wh-questions is wh-trace.

1.7 Role of Lexical Learning in the Instantiation of COMP for movement

In Chapter 2, we discussed the controversy over whether lexical learning precedes the instantiation of functional categories for the L2 or whether functional categories may be instantiated for the L2 prior to learning of the associated lexical items. Our study demonstrates that learners may produce local and long-distance wh-movement although the appropriate items which fill matrix and embedded COMP in the target language are not phonologically realized. It also demonstrates that learners may produce the appropriate items in matrix and embedded COMP but not be able to produce local or long-distance wh-movement. These results are consistent with Demuth's (1992) view that it is categorial identification of the lexical items associated with functional categories which is essential for syntactic restructuring and not phonological realization. Our study suggests that COMP is only instantiated for movement in the L2 after the lexical items which are associated with matrix and embedded COMP are accurately categorised.

2 Evaluation of the Study

The purpose of this study was to test the continued accessibility of certain UG principles to L2 learners. Specifically, it set out to test the prediction that UG principles which are related to wh-movement are accessible to the Malay L2 learner once these are relevant to the grammar, that is, once wh-movement has been acquired. In so doing, the study drew on various forms of evidence regarding the status of wh-movement in the interlanguage. The success of the study depends on the extent to which these forms of evidence demonstrate that L2 learners continue to have access to UG principles once they have acquired wh-movement.

Firstly, intermediate Malay learners reject violations which involved movement across invariant barriers more decisively than violations which involved variant barriers: they give lower ratings to object extraction from relative clauses and adjuncts than from wh-islands and complex noun phrases. The ability of Malay learners to rank grammatical extraction over ungrammatical wh-extraction is also first seen in extractions involving invariant barriers and later in those involving variant barriers. This differentiated response to strong and weak Subjacency violations is also seen at the level of production: low, mid and high level learners produce fewer violations involving movement across invariant barriers than variant barriers.

Secondly, acquisition of wh-movement through continued access to UG principles is demonstrated in the ability of Malay learners to reject violations of two UG principles (ungrammatical subject extraction) more strongly than violations of a single UG principle (ungrammatical object extraction). We have seen that this ability is construction-specific and may be influenced by L1 constraints. In the production task too, Malay learners produce more violations involving ungrammatical object extraction than ungrammatical subject extraction.

Thirdly, the increasing ability of the L2 learner to rank grammatical wh-movement over UG violations provides evidence of continued access to UG principles in the acquisition of wh-movement. In the absence of negative evidence, learners come to realise that certain forms of wh-extraction are not permitted in the L2, although they may be permitted in the L1, such as extraction from CP Subjects. Learners also realise that certain forms of wh-extraction not allowed in the L1, such as extraction

from CP Objects, are permitted in the L2. This increasing awareness of the domains of grammatical and ungrammatical extraction allows them to rank the former over the latter.

Fourthly, learners' general acceptance of grammatical local and long-distance movement with continued exposure to the L2 supports the argument that UG principles continue to be accessible to the L2 learner. They are able to overcome the L1 constraint against object extraction in the acceptance of local and long-distance movement, although with the latter, they appear to benefit from input which they have recently received. However, they are not able to accept or produce extraction from DP Objects in simple or embedded sentences, suggesting that they are not able to overcome the two L1 constraints against this extraction-type. Since native speakers too do not accept this extraction type to the same extent as subject and object extraction, we cannot discount the influence of non-developmental considerations such as the lower grammatical status of extraction from DP Objects relative to subject and object extraction.

Fifthly, Malay learners' ability to produce local and long-distance movement and successfully avoid the production of UG violations with increasing exposure to the L2 is also contributive evidence for the acquisition of wh-movement through continued accessibility to UG principles. They are able to overcome the L1 influence against object extraction but not against extraction from DP Objects. Again, since the production of preposition-stranding or pied-piping which involves extraction from DP Objects is not the preferred response even among native speakers, this may be attributed to the low grammatical status of extraction from DP Objects.

The convergence of these forms of evidence from the rating, ranking and production tasks convincingly supports the argument that Malay learners follow an acquisitional order which is in accord with UG-theoretic predictions. This in turn supports our general hypothesis that Malay L2 learners continue to have access to UG principles related to wh-movement once wh-movement has been acquired.

2.1 Limitations of the Present Research

Since the present study interprets non-conformity to UG principles related to wh-movement in the context of the status of wh-movement in the interlanguage, it relies crucially on diagnostics of wh-movement. The main experimental diagnostics of wh-movement which were employed in the study related to knowledge of the constraints on wh-movement expressed in Subjacency and the ECP. A more complete picture of the status of wh-movement in the grammar may have been obtained by testing other aspects of wh-movement, such as the nature of the empty category. For example, in order to test whether learners interpreted the empty category in wh-movement as trace, we could have tested learners' sensitivity to strong crossover. Insensitivity to strong crossover would have provided evidence that the empty category in wh-questions generated by beginning learners is not trace and by implication, that the wh-questions are not generated by movement. The employment of more experimental diagnostics of movement would have buttressed our argument that beginners' non-conformity to Subjacency may be due to the fact that wh-movement has not been acquired and that Subjacency is thus not relevant to the grammar.

The present research is limited in that it demonstrates the accessibility of UG principles which relate to wh-movement to a particular group of L2 learners. It would not be wise to generalise from the findings of this study to claim that other UG principles continue to be accessible to the L2 learner. Nor would it be prudent to claim that movement-related principles are accessible to learners from other L1 backgrounds before extensive further research is undertaken.

3 Future Research

One direction which may be taken in studying continued accessibility to UG principles related to wh-movement within the developmental context may be to develop further diagnostics of wh-movement. We have already discussed testing the sensitivity of L2 learners to strong crossover restrictions as a means of investigating whether they generate wh-questions by wh-movement. Other means in which we may test whether learners generate wh-questions by movement may be to test learners' ability to reject certain characteristics of non-movement such as

resumptive pronouns, null prep and the absence of gaps. Since Subjacency principles relate particularly to long-distance wh-movement, we may also wish to test learners' ability to reject wh-questions in which there is only partial movement instead of long-distance movement, such as wh-movement within the matrix or embedded clause. Evidence that learners are able to reject questions generated in the absence of movement or only partial movement instead of long-distance movement would allow us to further evaluate conformity to Subjacency within a developmental context.

Future empirical investigation based on current developments in linguistic theory on the nature of empty categories may provide the means for us to arrive at a deeper understanding of how learners analyse wh-questions in the absence of wh-movement. For example, we have suggested that the empty category in the 'be' forms produced by at least some learners in the present study may be the null constant which has recently been postulated by Rizzi (1994). Since the null constant is [-anaphor, -pronominal], it is like the wh-trace in that it is subject to ECP. However, it is unlike the wh-trace in not being a variable which is bound by an overt operator and subject to Subjacency. Thus, if the empty category in the grammar of beginning learners is a null constant and not trace or pro, we may predict that there is a stage in the early stages of L2 acquisition when beginning learners may obey the ECP but not Subjacency. Further, Lasnik and Stowell (1991) has suggested that while both wh-traces and null constants are subject to strong crossovers, only wh-traces are subject to weak crossovers. Thus, learners who are treating the empty category in wh-questions as null constant and not trace or pro may be sensitive to strong crossovers but not weak crossovers. These diagnostics of the presence of the null constant in wh-questions may allow us to empirically investigate the identity of the empty category in the beginning stages of the interlanguage.

Another direction in which fruitful future research may be carried out relates to the inability of Malay learners to overcome the L1 constraint against extraction from DP Objects which we attribute to the absence of the specifier position in DP. Another perspective from which this inability may be viewed is the difficulty which Malay learners appear to face in instantiating DP for the L2. Further research could investigate whether Malay learners have difficulty acquiring other features which are associated with DP, particularly the specifier position of DP, such as nominal and

pronominal possessives. Evidence that they are able to acquire these features would point to the continued accessibility of UG in this area.

A principled explanation for the extent to which UG is accessible or is not accessible is still lacking in the current state of second language acquisition research. Regarding the extent to which UG has been shown to continue to be accessible, a satisfactory explanation remains to be provided to account for why these principles become accessible to the L2 learner when they do. This study has contributed evidence which suggests that the principles of Subjacency and the ECP continue to be accessible to the Malay learner of English in the acquisition of wh-movement and that one potential explanation for why these principle become accessible when they do may reside in the current relevance of these principles to the L2 grammar.

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Appendix A

Lexicalizations for Rating Task

Abbreviations

S = Subject	G = Grammatical
O = Object	U = Ungrammatical

Ungrammatical Subject Extraction from Relative Clauses
Who does Devi like the dress which t had bought?
Who did Peter steal the pen which t had bought?

Ungrammatical Object Extraction from Relative Clauses
What did Yati find the man who repaired t?
What did Faridah see the boy who chased t?

Ungrammatical Extraction from Adjuncts
Who did John arrive before t had cooked the rice? (S)
What did John arrive before Sue had cooked t? (O)
Who did Rose go to sleep after t had locked the door? (S)
What did Rose go to sleep after Kim had locked t? (O)

Ungrammatical Extraction from Wh-Islands
What does Rina know where Shama bought t? (S)
Who does Rina know where t bought the bag? (O)
Who did Khalid explain how t built the house? (S)
What did Khalid explain how Faizal built t? (O)

Ungrammatical Extraction from Complex Noun Phrases
Who did Jim believe the story that t had stolen the car? (S)
What did Jim believe the story that John had stolen t? (O)
Who did Rose hear the news that t had lost the money? (S)
What did Rosli hear the news that Jane had lost t? (O)

Ungrammatical Extraction from DP Subjects
What do books about t bore Sharifah?
What do stories about t frighten Nora?

Ungrammatical Extraction from CP Subjects
What was that Mary saw t widely believed?
What was that Kim won t known by everyone?

'That-Trace Effects'
Who does Khatijah think that t won the game? (U)
What does Khatijah think t won the game? (G)
Who does Salinah know that t likes the book? (U)
Who does Salinah know likes t the book? (G)

Grammatical Extraction in Simple Sentences
Who likes stories about ghosts? (S)
What does Daud like t? (O)
What does Daud like stories about t? (from DP object)
Who borrowed the book about birds? (S)
What did Rosnah borrow t? (O)
What did Rosnah borrow a book about t? (from DP object)

Grammatical Extraction in Embedded Clauses
Who does she know t likes stories about ghosts? (S)
What does she know Daud likes t? (O)
What does she know Daud likes stories about t? (from DP Object)
Who did Tom hear t borrowed the book about birds? (S)
What did Tom hear that Rosnah borrowed t? (O)
What does Tom know that Rosnah borrowed a book about t? (from DP Object)

Appendix B

Instructions for the Rating Task in Malay and English

Arahan: Anda diberikan 10 saat untuk menjawab setiap soalan. Jika anda rasa ayat itu baik, tandakan nombor 5. Sekiranya anda fikir ayat itu tidak baik, tandakan nombor 1. Sekiranya anda fikir ianya antara keduanya, tandakan sama ada 2, 3 atau 4. Jangan tukarkan jawapan anda setelah anda menandakan jawapan bagi tiap-tiap ayat.

Contoh Satu
I am going home yesterday.

Sekiranya anda fikir ayat ini tidak baik, tandakan nombor 1 seperti berikut:-
✓1 2 3 4 5

Contoh Dua
I went to school yesterday.

Sekiranya anda fikir ayat ini baik, tandakan nombor 5 seperti berikut:-
1 2 3 4 ✓5

Instructions: You are given 10 seconds to provide a response for each of the following sentences. If you feel the sentence is good English, tick number 5. If you feel the sentence is bad English, tick number 1. If you feel the sentence is neither good English nor bad English, tick 2, 3 or 4. Do not change your answer after you have place a tick for each sentence.

Example 1
I am going home yesterday.

If you feel this sentence is bad English, tick number 1 as follows:-
✓1 2 3 4 5

Example 2
I went to school yesterday.

If you feel this sentence is good English, tick number 5 as follows:-
1 2 3 4 ✓5

Appendix C

Random Version A of Rating Task

1 Sarinah is sleeping in the bedroom.

2 Buy vegetable Salmah at the market.

3 What did Rosli hear the news that Jane had lost?

4 Who borrowed the book about birds?

5 Who does Salinah know likes the book?

6 Who does she know likes stories about ghosts?

7 What did Tom hear that Rosnah borrowed?

8 What did Faridah see the boy who chased?

9 Who does Rina know where bought the bag?

10 Who likes stories about ghosts?

11 Who did Peter steal the pen which had bought?

12 What does Tom know that Rosnah borrowed a book about?

13 What did John arrive before Sue had cooked?

14 Who did Rose go to sleep after had locked the door?

15 Who did John arrive before had cooked the rice?

16 What does she know Daud likes stories about?

17 What did Rosnah borrow a book about?

18 What was that Mary saw widely believed?

19 Who does Devi like the dress which had bought?

20 What does Khatijah think won the game?

21 What did Rose go to sleep after Kim had locked?

22 What did Yati find the man who repaired?

23 What did Jim believe the story that John had stolen?

24 What do books about bore Sharifah?

25 Who did Rose hear the news that had lost the money?

26 What was that Kim won known by everyone?

27 What does Daud like stories about?

28 Who does Khatijah think that won the game?

29 What does Daud like?

30 Who did Jim believe the story that had stolen the car?

31 What do stories about frighten Nora?

32 What does Rina know where Shama bought?

33 What did Rosnah borrow?

34 Who did Khalid explain how built the house?

35 Who did Tom hear borrowed the book about birds?

36 Who does Salinah know that likes the book?

37 What did Khalid explain how Faizal built?

38 What does she know Daud likes?

Appendix D

Random Version B of Rating Task

1 Salmah is sleeping in the bedroom.

2 Buy vegetables Sarinah at the market.

3 Who does Rina know where bought the bag?

4 What did Tom hear that Rosnah borrowed?

5 Who does Salinah know that likes the book?

6 What did Rosnah borrow?

7 Who did John arrive before had cooked the rice?

8 What did Jim believe the story that John had stolen?

9 What does Daud like stories about?

10 What did Rosnah borrow a book about?

11 What was that Kim won known by everyone?

12 Who does Salinah know likes the book?

13 What did Rosli hear the news that Jane had lost?

14 Who did Khalid explain how built the house?

15 Who does Devi like the dress which had bought?

16 What did Khalid explain how Faizal built?

17 What did Rose go to sleep after Kim had locked?

18 Who did Tom hear borrowed the book about birds?

19 What does Daud like?

20 Who does Khatijah think that won the game?

21 What do stories about frighten Nora?

22 What does she know Daud likes?

23 Who did Peter steal the pen which had bought?

24 What was that Mary saw widely believed?

25 Who did Rose go to sleep after had locked the door?

26 Who did Jim believe the story that had stolen the car?

27 What does she know Daud likes stories about?

28 Who does she know likes stories about ghosts?

29 Who did Rose hear the news that had lost the money?

30 What do books about bore Sharifah?

31 What did John arrive before Sue had cooked?

32 What does Tom know that Rosnah borrowed a book about?

33 What does Khatijah think won the game?

34 Who likes stories about ghosts?

35 What did Faridah see the boy who chased?

36 What does Rina know where Shama bought?

37 Who borrowed the book about birds?

38 What did Yati find the man who repaired?

Appendix E

Answer Sheet for Rating Task

	bad English				good English
1.	1	2	3	4	5
2.	1	2	3	4	5
3.	1	2	3	4	5
4.	1	2	3	4	5
5.	1	2	3	4	5
6.	1	2	3	4	5
7.	1	2	3	4	5
8.	1	2	3	4	5
9.	1	2	3	4	5
10.	1	2	3	4	5
11.	1	2	3	4	5
	.	.	.	.	.
	.	.	.	.	.
	.	.	.	.	.
	.	.	.	.	.
	.	.	.	.	.
63.	1	2	3	4	5
64.	1	2	3	4	5
65.	1	2	3	4	5
66	1	2	3	4	5
	bad English				good English

Appendix F

Lexicalizations for Ranking Task

Abbreviations

S = Subject	G S = Grammatical Subject
O = Object	U S = Ungrammatical Subject
G = Grammatical	G O = Grammatical Object
U = Ungrammatical	U G = Ungrammatical Object

Subject and Object Extraction from Relative Clauses

a What did Zul see the man who had stolen? (U O).
b What did the man whom Zul saw steal? (G O)
c Who did Zaini borrow the bag which bought? (U S)
d Who bought the bag which Zaini borrowed? (G S)

Subject and Object Extraction from Adjuncts

a Who did Khalid leave the shop before had bought? (U S)
b Who bought the watch after Khalid had left the shop? (G S)
c What did Khalid leave the shop before Rose had bought? (U O)
d What did Rose buy after Khalid left the shop? (G O)

a Who did Ali go to work after had washed the car? (U S)
b Who had washed the car before Ali went to work? (G S)
c What did Ali go to work after Mat had washed? (U O)
d What did Mat wash before Ali went to work? (G O)

Subject and Object Extraction from Wh-Islands

a Who did Farid wonder whether had eaten the apple? (U S)
b Who did Farid think had eaten the apple? (G S)
c What did Paul wonder whether Sara had eaten? (U O)
d What did Paul think Sara had eaten? (G O)

a Who did Gita know how had made the curry? (U S)
b Who did Gita know had made the curry? (G S)
c What did Gita know how Siti had made? ((U O)
d What did Gita know Siti had made? (G O)

Subject and Object Extraction from Complex Noun Phrases

a Who did Joe hear the news had stolen the car? (U S)
b Who did Joe hear had stolen the car? (G S)
c What did Joe hear the news that Robin had stolen? (U O)
d What did Joe hear that Robin had stolen? (G O)

'That-trace Effects'

a Who did Rosnah say that had lent her the book? (U)
b Who did Rosnah say had lent her the book? (G)

a Who did Halim say that had gone home? (U)
b Who did Halim say had gone home? (G)

Extraction of DP Subjects, from DP Subjects and from DP Objects

a What do books about bore Tom? (from DP Subject)
b What does Tom hate books about? (from DP Object)
c What bores Tom? (of DP Subject)

a What do stories about frighten Julie? (from DP Subject)
b What does Julie like stories about? (from DP Object)
c What frightens Julie? (of DP Subject)

Extraction from CP Subjects and CP Objects

a What was that Mary lost widely known? (CP Subject)
b What was it widely known that Mary lost? (CP Object)

a What was that Steven won known by no one? (CP Subject)
b What did no one know that Steven had won? (CP Object)

Extraction of DP Objects and from DP Objects in Simple Sentences

a What does Rose hate cakes with? (from DP Object)
b What does Rose hate? (O)
c What is hated by Rose? (Passive Subject)

a What does Marinah like books with? (from DP Object)
b What does Marinah like? (O)
c What is liked by Marinah? (Passive Subject)

Extraction of Subjects, Passive Subjects, Objects and from DP Objects in Embedded Sentences

a Who did Sarinah hope had taken a photograph of Aziah? (S)
b What did Sarinah hope Jalleh had taken? (O)
c Who did Sarinah hope Jalleh had taken a photograph of? (DP Object)
d What did Sarinah hope had been taken by Jalleh? (Passive Subject)

a Who does Mrs.Tan think has taken a basket of fruit? (S)
b What does Mrs.Tan think Steven has taken? (O)
c What does Mrs.Tan think Steven has taken a basket of? (DP Object)
d What does Mrs.Tan think has been taken by Steven? (Passive Subject)

Appendix G

Instructions for the Ranking Task in Malay and English

Arahan:
Dalam latihan ini, anda diberikan beberapa set ayat. Anda dikehendaki mengklaskan ayat-ayat itu mengikut mana yang terbaik.

1. Pilih manakah ayat yang terbaik dan tandakan nombor 1. Sekiranya anda rasa terdapat dua atau lebih ayat-ayat itu yang sama baiknya, tandakan 1 dalam kotak-kotak tersebut.

2. Pilih pula ayat yang kedua baiknya dan tandakan nombor 2. Sekiranya anda rasa terdapat dua atau lebih ayat-ayat itu yang sama baiknya, tandakan 2 dalam kotak-kotak tersebut.

3. Berdasarkan cara di atas, tandakan semua kotak-kotak dibawa mengikut teknik tadi.

In the set below, each of the sentences may be regarded as equally good. Accordingly, you may fill the boxes next to each of these sentences with number 1.

Contoh 1
Semua ayat-ayat berikut dianggap sama baik. Oleh itu anda boleh menandakan 1 di kotak sebelah ayat-ayat ini seperti yang telah ditandakan:-

(a) She went to the market yesterday. [1]

(b) Mr. Lim stayed at home yesterday. [1]

(c) Sarinah played with her sister yesterday. [1]

Contoh 2
Bagi ayat-ayat berikut pula, (a) boleh diklaskan sebagai 1, (b) sebagai 2, (c) 3 and (d) 4.

(a) She is going to the market today. [1]

(b) She go to the market today. [2]

(c) She go to the market yesterday. [3]

(d) Go she to the market today. [4]

Instructions

In this exercise, you are given several sets of sentences. You are asked to rank sets of sentences according to how good you feel they are.

1. First, decide which is the best sentence and write number 1 in the box next to it. If you think there are two or more equally good sentences, you may write number 1 in these boxes too.

2. Then decide which of the remaining sentences is the best and write number 2 in the box next to that sentence. Again, if you think that there are two or more equally good remaining sentences, you may write 2 in the boxes next to the sentences.

3. Continue in this way so that all the sentences are numbered from best to worst.

Example 1

In the set below, each of the sentences may be regarded as equally good. Accordingly, you may fill the boxes next to each of these sentences with number 1.

(a) She went to the market yesterday. [1]

(b) Mr. Lim stayed at home yesterday. [1]

(c) Sarinah played with her sister yesterday. [1]

Example 2

In the set below, (a) may be classed as 1, (b) as 2, (c) 3 and (d) 4.

(a) She is going to the market today. [1]

(b) She go to the market today. [2]

(c) She go to the market yesterday. [3]

(d) Go she to the market today. [4]

Appendix H

Random Version A of Ranking Task

1 a What did Zul see the man who had stolen? ☐

b What did the man whom Zul saw steal? ☐

c Who did Zaini borrow the bag which bought? ☐

d Who bought the bag which Zaini borrowed? ☐

2 a What does Rose hate cakes with? ☐

b What does Rose hate? ☐

3 a What do books about bore Tom? ☐

b What does Tom hate books about? ☐

c What bores Tom? ☐

4 a What did Khalid leave the shop before Rose had bought? ☐

b Who bought the watch after Khalid had left the shop? ☐

c What did Rose buy after Khalid left the shop? ☐

d Who did Khalid leave the shop before had bought? ☐

5 a What does Mrs.Tan think Steven has taken a basket of? ☐

b Who does Mrs.Tan think has taken a basket of fruit? ☐

c What does Mrs.Tan think Steven has taken? ☐

d What does Mrs.Tan think has been taken by Steven? ☐

6 a What did Nura believe the news Ramli had broken? ☐

b Who did Nura believe the story had broken the glass? ☐

c Who did Nura believe had broken the glass? ☐

d What did Nura believe Ramli had broken? ☐

7 a What does the woman whom Sally likes sell? ☐

b What does Sally like the woman which sells t? ☐

c Who did Sally buy the dress which had sewn? ☐

d Who had sewn the dress which Sally bought? ☐

8 a Who did Halim say that had gone home? ☐

b Who did Halim say had gone home? ☐

9 a What do stories about frighten Julie? ☐

b What does Julie like stories about? ☐

c What frightens Julie? ☐

10 a Who did Joe hear the news had stolen the car? ☐

b What did Joe hear that Robin had stolen? ☐

c What did Joe hear the news that Robin had stolen? ☐

d Who did Joe hear had stolen the car? ☐

11 a What was that Steven won known by no one? ☐

b What did no one know that Steven had won? ☐

12 a What was it widely known that Mary lost? ☐

b What was that Mary lost widely known? ☐

13 a What does Marinah like books with? ☐

b What does Marinah like? ☐

14 a What did Paul wonder whether Sara had eaten? ☐

b What did Paul think Sara had eaten? ☐

c Who did Farid wonder whether had eaten the apple? ☐

d Who did Farid think had eaten the apple? ☐

15 a Who did Rosnah say had lent her the book? ☐

b Who did Rosnah say that had lent her the book? ☐

16 a Who did Gita know how had made the curry? ☐

b Who did Gita know had made the curry? ☐

c What did Gita know how Siti had made? ☐

d What did Gita know Siti had made? ☐

17 a Who had washed the car before Ali went to work? ☐

b What did Ali go to work after Mat had washed? ☐

c Who did Ali go to work after had washed the car? ☐

d What did Mat wash before Ali went to work? ☐

18 a Who did Sarinah hope had taken a photograph of Aziah? ☐

b What did Sarinah hope had been taken by Jalleh? ☐

c Who did Sarinah hope Jalleh had taken a photograph of? ☐

d What did Sarinah hope Jalleh had taken? ☐

Appendix I

Random Version B of Ranking Task

1 a What did Mat wash before Ali went to work? ☐

b What did Ali go to work after Mat had washed? ☐

c Who did Ali go to work after had washed the car? ☐

d Who had washed the car before Ali went to work? ☐

2 a Who did Paul think had eaten the apple? ☐

b Who did Paul wonder whether had eaten the apple? ☐

c What did Paul think Sara had eaten? ☐

d What did Paul wonder whether Sara had eaten? ☐

3 a What did Gita know how Siti had made? ☐

b What did Gita know Siti had made? ☐

c Who did Gita know had made the curry? ☐

d Who did Gita know how had made the curry? ☐

4 a What does Mrs.Tan think Steven has taken a basket of? ☐

b What does Mrs.Tan think has been taken by Steven? ☐

c Who does Mrs.Tan think has taken a basket of fruit? ☐

d What does Mrs.Tan think Steven has taken? ☐

5 a What was it widely known that Mary lost? ☐

b What was that Mary lost widely known? ☐

6 a Who did Halim say had gone home? ☐

b Who did Halim say that had gone home? ☐

7 a What do books about bore Tom? ☐

b What does Tom hate books about? ☐

c What bores Tom? ☐

8 a Who did Nura believe had broken the glass? ☐

b What did Nura believe Ramli had broken? ☐

c What did Nura believe the news Ramli had broken? ☐

d Who did Nura believe the story had broken the glass? ☐

9 a Who did Rosnah say that had lent her the book? ☐

b Who did Rosnah say had lent her the book? ☐

10 a What does Rose hate cakes with? ☐

b What does Rose hate? ☐

11 a What does Marinah like books with? ☐

b What does Marinah like? ☐

12 a Who did Joe hear the news had stolen the car? ☐

b Who did Joe hear had stolen the car? ☐

c What did Joe hear the news that Robin had stolen? ☐

d What did Joe hear that Robin had stolen? ☐

13 a What was that Steven won known by no one? ☐

b What did no one know that Steven had won? ☐

14 a What did Zul see the man who had stolen? ☐

b Who bought the bag which Zaini borrowed? ☐

c What did the man whom Zul saw steal? ☐

d Who did Zaini borrow the bag which bought? ☐

15 a Who did Sarinah hope Jalleh had taken a photograph of? ☐

b Who did Sarinah hope had taken a photograph of Aziah? ☐

c What did Sarinah hope Jalleh had taken? ☐

d What did Sarinah hope had been taken by Jalleh? ☐

16 a What frightens Julie? ☐

b What do stories about frighten Julie? ☐

c What does Julie like stories about? ☐

17 a Who bought the watch after Khalid had left the shop? ☐

b What did Khalid leave the shop before Rose had bought? ☐

c Who did Khalid leave the shop before had bought? ☐

d What did Rose buy after Khalid left the shop? ☐

18 a What does Sally like the woman which sells t? ☐

b Who did Sally buy the dress which had sewn? ☐

c What does the woman whom Sally likes sell? ☐

d Who had sewn the dress which Sally bought? ☐

Appendix J

Lexicalizations for Production Task

1 Roslinda lost the money which Rani had given her. (Subject Extraction from Relative Clause)

2 Ali has met the person who wrote the book. (Object Extraction from Relative Clause)

3 Lina came into the class after the teacher had left. (Subject Extraction from Adjunct)

4 Maria came home after she bought the flowers. (Object Extraction from Adjunct)

5 Kim found out how Ahmad became rich. (Subject Extraction from Wh-island)

6 Farid knows where Faizal bought the ball. (Object Extraction fromWh-island)

7 Maimunah was sad to hear the news that Akram had died. (Subject Extraction from Complex Noun Phrase)

8 Khatijah believed the story that Stewart had lost her bag. (Object Extraction from Complex Noun Phrase)

9 The news of the accident surprised Mary. (Extraction from DP Subject)

10 That John lost the money was not surprising. (Extraction from CP Subject)

11 Maniam knows that Ravi likes to watch films.('That trace effects')

12 Faizal likes football. (Subject extraction in Simple Sentence)

13 Karen likes chocolate.(Object extraction in Simple sentence)

14 Mary boys with long hair. (Extraction from DP Object in Simple Sentence)

15 Mrs. Lim hoped that Steven went to school. (Subject Extraction in Embedded Sentence)

16 Rosnah hoped that Zaid would buy flowers. (Object Extraction in Embedded Sentence)

17 Jim knows that Sue likes to watch films about animals. (Extraction from DP Object in Embedded Sentence)

Appendix K

Instructions for the Production Task in Malay and English

Arahan
Sila baca ayat-ayat dibawah yang mengandungi frasa yang bergaris. Kemudian buat soalan untuk mendapatkan frasa yang bergaris tadi. Cuba sedapat mungkin menggunakan perkataan-perkataan yang telah digunakan di dalam ayat sebelumnya. Jangan pendekkan soalan atau menggunakan terlalu banyak perkataan baru kecuali tiada cara lain untuk membuat soalan.

Contoh
Item: Maziah said that her best friend is Sarinah

Jawapan yang sesuai ialah:
Who did Maziah say that her best friend is?

Jawapan di bawah tidak sesuai:
(a) Who is Maziah's best friend?
(b) What did Maziah say?
(c) Which of her friends does Maziah like the most?

(a) dan (b) tidak sesuai kerana terlalu rinkas. (c) tidak sesuai kerana terdapat terlalu banyak perkataan baru.

Semua ruang perlu diisi. Sekiranya anda tidak tahu jawapan bagi satu-satu soalan, isikan tanda tanya (?) di ruang berkenaan.

Instructions:
Please read the following sentences, each of which contains an underlined phrase. For each sentence, write a question to get the information which is underlined. As far as possible, try to use the same words which are used in the sentence you have been given to form a good sentence. Do not shorten the sentence or use too many new words which are not in the sentence you have been given.

Example
Item: Maziah said that her best friend is Sarinah.

A suitable answer would be as follows:
Who did Maziah say that her best friend is?

The following answers are not suitable:
(a) Who is Maziah's best friend?
(b) What did Maziah say?
(c) Which of her friends does Maziah like the most?
(a) and (b) are not suitable because they are short questions. (c) is not suitable because it contains several new words which are not in the given sentence.

Do not leave any of the space blank. If you are not able to answer any of the questions, place a question mark (?) in the space provided.

Appendix L

Random Version A of Production Task

1 The news of the accident surprised Mary.

---

2 Maria came home after she bought the flowers.

---

3 Mary likes boys with long hair.

---

4 Maniam knows that Ravi likes to watch films.

---

5 Mrs. Lim hopes that Steven went to school.

---

6 Karen likes chocolate.

---

7 Roslinda lost the money which Rani had given her.

---

8 Rosita hopes that Zaid will buy flowers.

---

9 Maimunah was sad to hear the news that Akram had died.

---

10 Kim found out how Ahmad became rich.

---

11 Khatijah believed the story that Stewart had lost her bag.

---

12 Lina came into the class after the teacher had left.

---

13 That John lost the money was not surprising.

---

14 Ali has met the person who wrote the book.

---

15 Faizal likes football.

---

16 Farid knows where Faizal bought the ball.

---

17 Jim knows that Sue likes to watch films about animals.

Appendix M

Random Version B of Production Task

1 Faizal likes football.

---

2 Ali has met the person who wrote the book.

---

3 Mrs. Lim hopes that Steven went to school.

---

4 Lina came into the class after the teacher had left.

---

5 Maimunah was sad to hear the news that Akram had died.

---

6 Maria came home after she bought the flowers.

---

7 Farid knows where Faizal bought the ball.

---

8 Roslinda lost the money which Rani had given her.

---

9 The news of the accident surprised Mary.

---

10 Maniam knows that Ravi likes to watch films.

---

11 Khatijah believed the story that Stewart had lost her bag.

---

12 Kim found out how Ahmad became rich.

---

13 Rosita hopes that Zaid will buy flowers.

---

14 Karen likes chocolate.

---

15 That John lost the money was not surprising.

---

16 Mary likes boys with long hair.

---

17 Jim knows that Sue likes to watch films about animals.

Appendix N[1]

Cloze Test

Instructions
Write the missing word in each space. The size of the space gives an indication of how long the missing word is.

(1)
What are our cities going to be like in ten years, or twenty? Are we going to build enormous motorways across them? Or are (1)___ going to leave our cars outside the cities and travel by (2) ____ or underground in the cities? With big motorways across them full (3) ___ noisy, dirty cars and lorries, our cities are going to be (4)_____ places! But people want to travel in the cities and some (5) ___ them say: `These buses and underground trains are dirty and slow, (6) ____ they cost a lot of money. I want to use my (7) ____.' This is the problem. How can we solve it? There are (8) _____ good ideas. In 1971, for example, the authorities in Rome began an (9)_____ experiment: passengers on the city buses did not have to pay (10) ____ their tickets- and there were no tickets! They travelled on the (11) ____ for nothing. So many people left their cars at home and (12) _____ the buses. This was a very good thing.

(2)
An interesting traffic experiment was tried out in Stockholm. People paid a little money for a season ticket (1) ___ travel on any bus, train or tram all over the (2) _____ city for a month. Many people in Stockholm left (3) _____ cars at home. In many cities now some streets (4) ____ closed to vehicles. Cars and buses do not use (5) _____ and pedestrians are safe there. They walk in the (6) _____, and drink coffee at the cafes on the pavement and (7)_____ life. In London, there is another experiment: part of (8)____ street is only for buses, so the buses travel (9) _____. There are no cars or taxis in front of (10)_____. These are some of the ideas for the future (11) ___ transport in our cities.

Instructions
Write in the missing word in each space. The first letter of each word is given. Words may be shorter than the space indicated.

The emotional development o__ an infant starts at t___ beginning o__ his life. I__ w__ are t__ judge t___ way i__ w_____ a human being deals w____ h___ fellow creatures, a___ see h___ h__ builds up h___ personality a___ his life, w__ cannot afford t__ leave out what happens i__ the earliest years, months, a___ even weeks a___ days o__ his life.

---

[1] This test was taken from Hill and Fenn (1989). Its use as an independent measure of proficiency in our study was kindly authorised by Mr. Robert Hill.

Appendix O

Language Background Questionnaire

Soalselidik berkenaan latar-belakang Bahasa penuntut/ Questionnaire on language background of subjects

Nama/Name: _____

Umur/Age: ____

Jantina/Sex: _____

Kelas/Level: _____

Pekerjaan/Occupation: _____

Bahasa Pertama/First Language: _____

Umur ketika mula mempelajari Bahasa Inggerris/Age when English was first learnt: ____

Bahasa yang digunakan dengan/language used with:-

a) kaum keluarga/family members: _____

b) kawan-kawan/friends: _____

c) masyarakat umum/others: _____

Appendix P

Language Background Questionnaire Responses and Cloze Test Scores[1]

ID	AGE	SEX	LEVEL	BEGIN AGE	YEARS	LA	LB	LC	YEARS ABRD	SCORE
001	14	male	low	7	7	m	m,e	m	0	21
002	14	male	low	7	7	m	m	m	0	20
003	14	male	low	7	7	m	m	m	0	16
004	14	male	low	7	7	m	m	m	0	16
005	14	male	low	7	7	m	m	m	0	17
006	14	male	low	7	7	m	m	m	0	6
007	14	male	low	7	7	m	m	m	0	12
008	14	male	low	7	7	m	m	m	0	8
009	14	male	low	7	7	m	m	m	0	17
010	14	male	low	7	7	m	m	m	0	14
011	14	male	low	7	7	m	m	m	0	12
012	14	male	low	7	7	m	m	m	0	18
013	14	male	low	7	7	m	m	m	0	14
014	14	male	low	7	7	m	m	m	0	14
015	14	male	low	7	7	m	m	m	0	15
016	14	male	low	7	7	m	m	m	0	13
017	14	fem	low	7	7	m	m	m	0	14
018	14	fem	low	7	7	m	m	m	0	13
019	14	fem	low	7	7	m	m	m	0	7
020	14	fem	low	6	8	m	m	m	0	12
021	14	fem	low	6	8	m	m	m	0	6
022	14	fem	low	6	8	m	m	m	0	11
023	14	fem	low	7	7	m	m	m	0	5
024	14	fem	low	7	7	m	m	m	0	5
025	14	fem	low	7	7	m	m	m	0	13
026	14	fem	low	7	7	m	m,e	m	0	18
027	14	fem	low	7	7	m	m	m	0	10
028	14	fem	low	7	7	m	m	m	0	11
029	14	fem	low	7	7	m	m	m	0	20
030	14	fem	low	7	7	m	m	m	0	10
031	14	male	low	7	7	m	m	m	0	13
032	14	male	low	7	7	m	m	m	0	7
033	14	male	low	6	8	m	m	m,e	0	10
034	14	male	low	7	7	m	m	m	0	14
035	14	male	low	6	8	m	m	m	0	5
036	14	male	low	7	7	m	m	m	0	10
037	14	male	low	7	7	m	m	m	0	12
038	14	male	low	7	7	m	m	m	0	8
039	14	male	low	7	7	m	m	m	0	7
040	14	male	low	7	7	m	m	m	0	14
041	14	male	low	7	7	m	m	m	0	19
042	14	male	low	7	7	m	m	m	0	7
043	14	male	low	7	7	m	m	m	0	9

[1] The key to the table is provided on pages 365 - 366.

ID	AGE	SEX	LEV	BEGIN AGE	YEARS	LA	LB	LC	YEARS ABRD	SCORE
044	14	male	low	7	7	m	m	m	0	9
045	14	male	low	7	7	m	m	m	0	3
046	14	male	low	7	7	m	m	m	0	7
047	14	male	low	7	7	m	m	m	0	18
048	14	male	low	7	7	m	m	m	0	5
049	14	male	low	6	8	m	m	m,e	0	11
050	14	fem	low	7	7	m	m,e	m	0	12
051	14	fem	low	6	8	m	m	m	0	11
052	14	fem	low	7	7	m	m	m	0	12
053	14	fem	low	7	7	m	m	m	0	20
054	14	fem	low	7	7	m	m	m	0	17
055	14	fem	low	7	7	m	m	m	0	20
056	14	fem	low	7	7	m	m	m	0	24
057	14	fem	low	7	7	m	m	m	0	13
058	14	fem	low	7	7	m	m	m	0	6
059	14	fem	low	7	7	m	m	m	0	8
060	14	fem	low	6	7	m	m	m	0	8
061	16	male	mid	6	10	m	m	m	0	11
062	16	male	mid	7	9	m	m	m	0	24
063	16	male	mid	7	9	m	m	m	0	21
064	16	male	mid	6	10	m	m	m	0	24
065	16	fem	mid	7	9	m	m	m	0	14
066	16	fem	mid	7	9	m	m	m	0	27
067	16	fem	mid	7	10	m	m	m,e	0	25
068	16	fem	mid	7	9	m	m	m	0	19
069	16	fem	mid	7	9	m	m	m	0	27
070	16	fem	mid	7	9	m	m	m	0	31
071	16	male	mid	7	9	m	m	m	0	25
072	16	male	mid	7	9	m	m	m	0	22
073	16	male	mid	6	10	m,e	m	m	0	23
074	15	male	mid	6	9	m	m,e	m,e	0	20
075	16	fem	mid	6	10	m	m	m	0	24
076	16	fem	mid	6	10	m	m,e	m	0	22
077	16	fem	mid	7	9	m	m	m,e	0	17
078	16	fem	mid	7	9	m	m,e	m	0	21
079	16	fem	mid	7	10	m	m	m	0	19
080	16	fem	mid	6	10	m	m,e	m	0	16
081	16	male	mid	7	9	m	m	m	0	27
082	16	male	mid	7	9	m	m	m	0	19
083	16	male	mid	7	9	m	m	m	0	24
084	16	male	mid	7	10	m	m	m	0	24
085	16	fem	mid	7	9	m	m	m	0	27
086	16	fem	mid	7	9	m	m,e	m	0	24
087	16	fem	mid	7	9	m	m,e	m	0	22
088	16	fem	mid	7	9	m	m,e	m	0	18
089	16	fem	mid	4	12	m,e	m,e	m,e	0	34
090	15	fem	mid	6	9	m,e	m,e	m,e	2.5	32
091	16	male	mid	6	10	m	m	m	0	9
092	16	male	mid	6	10	m	m,e	m	0	8

ID	AGE	SEX	LEV	BEGIN AGE	YEARS	LA	LB	LC	YEARS ABRD	SCORE
093	16	male	mid	7	9	m	m,e	m	0	10
094	16	male	mid	6	10	m	m	m	0	11
095	17	male	mid	7	10	m	m	m	0	10
096	16	male	mid	6	10	m	m	m	0	11
097	16	fem	mid	7	9	m	m	m	0	14
098	16	fem	mid	7	9	m	m	m	0	23
099	16	fem	mid	6	10	m	m	m	0	26
100	16	fem	mid	7	9	m	m	m	0	11
101	16	male	mid	5	9	m	m	m	0	13
102	16	male	mid	7	9	m	m	m	0	9
103	16	fem	mid	7	9	m	m	m	0	20
104	16	fem	mid	7	9	m	m	m	0	11
105	16	fem	mid	7	9	m	m	m	0	12
106	16	fem	mid	7	9	m	m	m	0	24
107	16	male	mid	7	9	m	m	m	0	6
108	16	male	mid	8	8	m	m	m	0	4
109	16	male	mid	7	9	m	m	m	0	8
110	16	male	mid	10	6	m	m	m	0	14
111	15	fem	mid	7	8	m	m	m	0	19
112	16	fem	mid	7	9	m	m	m	0	19
113	16	fem	mid	7	9	m	m	m	0	16
114	15	fem	mid	7	8	m	m	m	0	14
115	16	fem	mid	7	9	m	m	m	0	24
116	16	male	mid	7	9	m	m	m	0	21
117	16	male	mid	7	9	m	m	m	0	19
118	16	male	mid	7	9	m	m	m	0	12
119	16	male	mid	7	9	m	m	m	0	16
120	16	male	mid	7	9	m	m	m	0	19
121	18	fem	high	6	12	m	m,e	m	0	38
122	17	fem	high	1.5	15.5	m,e	m,e	m,e	8	42
123	18	male	high	6	12	m	e	m	0	40
124	18	fem	high	7	11	m	m,e	m	0	34
125	18	male	high	6	12	m	m	m	0	37
126	18	male	high	4	14	m	m,e	m,e	2.5	38
127	18	fem	high	5	13	m,e	m	m	0	36
128	19	male	high	6	13	m,e	m,e	m	0	37
129	18	fem	high	7	11	m	m	m	0	38
130	18	fem	high	7	11	m	m	m	0	37
131	18	fem	high	7	11	m	m,e	m	0	32
132	18	fem	high	7	11	m,e	m,e	m,e	0	37
133	18	fem	high	6	12	m,e	m,e	m	0	29
134	17	fem	high	10	11	m	m,e	m,e	0	32
135	17	fem	high	6	11	m	m	m	0	31
136	18	fem	high	7	11	m,e	m,e	m	0	38
137	18	fem	high	6	12	m	m,e	m	0	35
138	19	fem	high	5	14	m,e	m,e	m	0	33
139	18	fem	high	6	12	m	m	m	0	27
141	18	fem	high	7	11	m	m	m	0	28
142	18	fem	high	5	13	m	m	m	0	34

ID	AGE	SEX	LEV	BEGIN AGE	YEARS	LA	LB	LC	YEARS ABRD	SCORE	OCC
143	18	male	high	7	11	m	m	m	0	31	
144	18	male	high	6	12	m	m,e	m	0	30	
145	18	fem	high	7	11	m	m	m	0	26	
146	18	male	high	7	11	m	m	m	0	25	
147	18	fem	high	7	11	m	m,e	m,e	0	35	
148	18	fem	high	4	14	m	m	m	0	38	
149	18	fem	high	3	15	m,e	m,e	m,e	3	38	
150	18	fem	high	7	11	m	m,e	m	0	38	
151	18	fem	high	5	13	m,e,o	m,e	m,e	0	40	
152	18	fem	high	3	15	m	m,e	m	9	28	
153	18	fem	high	2	16	m,e,o	m,e	m,e	5.5	39	
154	18	fem	high	5	13	m	m	m	0	24	
155	18	fem	high	6	12	m	m,e	m	0	35	
156	18	fem	high	6	12	m	m,e	m	0	32	
157	18	fem	high	5	13	m,e	m,e	m,e	0	30	
158	18	male	high	6	12	m	m	m	0	27	
159	17	male	high	6	11	m	m	m	0	25	
160	18	fem	high	6	12	m	m	m	0	27	
161	18	male	high	4	14	m	m	m	0	35	
162	18	male	high	6	12	m	m	m	1	21	
163	18	fem	high	7	11	m	m,e	m	0	24	
164	18	male	high	7	11	m	m,e	m	0	29	
165	18	fem	high	7	11	m	m	m	0	21	
166	18	fem	high	7	11	m	m	m	0	35	
167	18	fem	high	7	11	m	m	m	0	30	
168	19	male	high	6	13	m	m,e	m	0	25	
169	18	fem	high	7	11	m	m,e	m	0	29	
170	18	male	high	6	12	m	m	m	0	22	
171	18	male	high	6	12	m	m	m,e	0	23	
172	18	fem	high	7	11	m,e	m,e	m,e	0	42	
173	17	fem	high	6	11	m	m,e	m,e	0.25	35	
174	18	male	high	6	11	m	m,e	m	0	25	
175	37	fem	adv	6	31	m	m,e	m,e	1	42	
176	55	male	adv	12	43	m	m	m	2	43	EDU
177	28	fem	adv	5	23	m,e	m,e	m,e	4	42	EDU
178	34	fem	adv	6	28	m,e	m,e	m	0	40	MAN
179	50	male	adv	6	44	m,e	m,e	m	2	40	EDU
180	41	male	adv	7	34	m,e	m,e	m,e	0	40	EDU
181	34	male	adv	7	27	m	m,e	m,e	0.08	40	LAW
182	44	male	adv	13	30	m,e	m,e	m	0.08	44	AGR
183	44	fem	adv	6	38	m	m,e	m	9	45	EDU
184	49	fem	adv	7	42	m	m,e	m,e	0.25	41	EDU
185	51	fem	adv	6	44	m,e	m,e	m	7	42	HOU
186	53	male	adv	10	43	m,e	m,e	m,e	4	41	HOU
187	40	male	adv	7	33	m,e	m,e	m,e	0	43	EDU
188	47	male	adv	10	37	m	m,e	m,e	0	40	EDU
189	32	fem	adv	4	28	m,e	e	m	7	42	EDU
190	30	fem	adv	7	23	m	m,e	m,e	5	44	EDU
191	31	fem	adv	7	24	m	m,e	m	0	40	EDU

ID	AGE	SEX	LEV	BEGIN AGE	YEARS	LA	LB	LC	YEARS ABRD	SCORE	OCC
192	36	fem	adv	6	30	m,e	m,e	m	1	37	SUR
193	40	male	adv	13	27	m	m,e	m,e	4	35	EDU
194	38	fem	adv	6	26	m,e	m,e	m,e	0	38	EDU
195	32	male	adv	5	27	m	m,e	m	5.5	38	EDU
196	27	male	adv	7	20	m	e	e	0	35	LAW
197	43	fem	adv	10	33	m	m,e	m	0	36	NUR
198	25	fem	adv	6	19	m	m,e	m,e	4.5	36	EDU
199	43	fem	adv	8	35	m	m,e	m,e	0	36	AGR
200	42	male	adv	7	35	m,e	m,e	m,e	4	38	EDU
201	27	fem	adv	7	20	m,e	m,e	m,e	6	43	EDU
202	50	male	adv	6	44	m	m,e	m	0	42	WRI
203	26	fem	adv	5	21	m,e	m,e	m,e	5.75	43	LAW
204	27	fem	adv	7	20	m,e	m,e	m,e	6	42	LAW
205	41	fem	adv	6	35	m	m,e	m,e	1	42	EDU
206	30	male	adv	10	20	m	m	m,e	0	41	INS
207	43	fem	adv	11	32	m,e	m,e	m,e	0.17	42	MAN
208	33	male	adv	5	28	m	m,e	m,e	0	40	ACC
209	32	fem	adv	7	25	m	e	e	0	42	LAW
210	36	fem	adv	7	29	m	m,e	m,e	4.5	40	MAG
211	46	fem	adv	6	40	m,e	e	m,e	1	40	EDU
212	22	male	adv	8	14	m	m,e	m,e	0	41	UND
213	34	fem	adv	7	27	m,e	m,e	m,e	0	45	EDU
214	50	male	adv	8	42	m,e	m,e	m,e	5	42	EDU
215	34	male	adv	6	28	m,e	m,e	m,e	5	38	EDU
216	32	male	adv	6	26	m	m	m,e	5	35	EDU
217	-	male	adv	6	-	m	m,e	m,e	10	37	EXE
218	43	fem	adv	12	31	m	m,e	m	0.08	39	EDU
219	24	male	adv	6	18	m	m,e	m,e	0	35	UND
220	54	male	adv	7	47	m	m,e	m,e	3	39	EDU
221	37	male	adv	7	30	m	m,e	m,e	0	38	EXE
222	30	male	adv	7	23	m	m,e	m,e	0	39	EXE
223	29	male	adv	7	22	m	m	m	0	36	EXE
224	38	male	adv	6	26	m	m,e	m,e	0	38	EDU
225	40	male	adv	10	30	m,e	m,e	m,e	1	35	EDU

Key and Abbreviations

ID = Subject number
AGE = Age of subject
SEX = Gender of subject
fem = female
LEVEL = Proficiency Level
adv = Advanced
BEGIN AGE = Age of first exposure to English
YEARS = Number of years exposure to English

LA	=	Languages used with family
LB	=	Languages used with family and friends
LC	=	Languages used with society at large
m	=	Malay
e	=	English
o	=	Others
YEARS ABRD	=	Years spent in English-speaking country
SCORE	=	Score on Cloze Test
OCC	=	Occupation
EDU	=	Education (Teacher/Lecturer)
MAN	=	Manager
LAW	=	Lawyer
AGR	=	Agricultural Officer
HOU	=	Housewife
SUR	=	Surveyor
NUR	=	Nurse
WRI	=	Writer
INS	=	Insurance
ACC	=	Accountant
EXE	=	Executive
UND	=	Undergraduate

Appendix Q

Analysis of Variance of Mean Ratings by Subjects[1]

TABLE Q.1: Ungrammatical Extraction from Relative Clauses, Adjuncts, Wh-Islands and Complex Noun Phrases

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	7267.80458	1	7267.80458	2975.46	0.0000
	stage	804.75209	4	201.18802	82.37	0.0000
	version	47.66822	1	47.66822	19.52	0.0000
	sv	10.40158	4	2.60039	1.06	0.3747
1	ERROR	576.44980	236	2.44258		
	extrtype	9.02308	1	9.02308	15.17	0.0001
	es	0.40366	4	0.10091	0.17	0.9537
	ev	3.26439	1	3.26439	5.49	0.0200
	esv	5.96341	4	1.49085	2.51	0.0428
2	ERROR	140.33652	236	0.59465		
	conttype	78.72050	3	26.24017	45.59	0.0000
	cs	37.03466	12	3.08622	5.36	0.0000
	cv	8.12722	3	2.70907	4.71	0.0029
	csv	7.79614	12	0.64968	1.13	0.3330
3	ERROR	407.53535	708	0.57561		
	ec	13.64556	3	4.54852	7.58	0.0001
	ecs	15.40094	12	1.28341	2.14	0.0131
	ecv	4.87131	3	1.62377	2.71	0.0445
	ecsv	3.97215	12	0.33101	0.55	0.8808
4	ERROR	424.90743	708	0.60015		

[1] The Key and list of abbreviations are at the end of this Appendix.

TABLE Q.2: Subjacency Violations involving Ungrammatical Extraction from Relative Clauses, Adjuncts, Wh-Islands and Complex Noun Phrases

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	3894.49586	1	3894.49586	2621.02	0.0000
	stage	413.45434	4	103.36359	69.56	0.0000
	version	37.94059	1	37.94059	25.53	0.0000
	sv	6.27478	4	1.56869	1.06	0.3792
1	ERROR	350.66537	236	1.48587		
	conttype	59.88139	3	19.96046	32.40	0.0000
	cs	46.91544	12	3.90962	6.35	0.0000
	cv	8.80079	3	2.93360	4.76	0.0027
	csv	4.26706	12	0.35559	0.58	0.8615
2	ERROR	436.15642	708	0.61604		

TABLE Q.3: Ungrammatical Subject and Object Extraction from Relative Clauses

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	1317.87175	1	1317.87175	1563.57	0.0000
	stage	172.09752	4	43.02438	51.05	0.0000
	version	5.97121	1	5.97121	7.08	0.0083
	sv	4.92456	4	1.23114	1.46	0.2149
1	ERROR	198.91489	236	0.84286		
	extrtype	1.73752	1	1.73752	2.73	0.0997
	es	1.34233	4	0.33558	0.53	0.7156
	ev	4.05446	1	4.05446	6.37	0.0122
	esv	1.55320	4	0.38830	0.61	0.6555
2	ERROR	150.11403	236	0.63608		

TABLE Q.4: Ungrammatical Subject and Object Extraction from Adjuncts

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	1673.69729	1	1673.69729	1434.96	0.0000
	stage	245.68738	4	61.42184	52.66	0.0000
	version	3.27902	1	3.27902	2.81	0.0949
	sv	4.40610	4	1.10153	0.94	0.4390
1	ERROR	275.26371	236	1.16637		
	extrtype	1.23062	1	1.23062	2.15	0.1437
	es	5.90929	4	1.47732	2.58	0.0379
	ev	0.06833	1	0.06833	0.12	0.7299
	esv	2.33053	4	0.58263	1.02	0.3983
2	ERROR	134.97457	236	0.57193		

TABLE Q.5: Ungrammatical Subject and Object Extraction from Wh-Islands

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	1674.56204	1	1674.56204	1416.53	0.0000
	stage	246.07140	4	61.51785	52.04	0.0000
1	ERROR	284.90063	241	1.18216		
	extrtype	1.19756	1	1.19756	2.10	0.1484
	es	5.94526	4	1.48632	2.61	0.0363
2	ERROR	137.32219	241	0.56980		

TABLE Q.6: Ungrammatical Subject and Object Extraction from Complex Noun Phrases

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	2300.73855	1	2300.73855	2023.68	0.0000
	stage	185.84797	4	46.46199	40.87	0.0000
	version	29.70136	1	29.70136	26.12	0.0000
	sv	0.67997	4	0.16999	0.15	0.9631
1	ERROR	268.31001	236	1.13691		
	extrtype	2.88309	1	2.88309	5.01	0.0261
	es	0.77639	4	0.19410	0.34	0.8527
	ev	3.99409	1	3.99409	6.94	0.0090
	esv	1.98946	4	0.49737	0.86	0.4862
2	ERROR	135.83839	236	0.57559		

TABLE Q.7: Strong and Weak UG Violations

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	2701.71446	1	2701.71446	2108.39	0.0000
	stage	15.63973	4	3.90993	3.05	0.0177
	version	59.47367	1	59.47367	46.41	0.0000
	sv	58.71890	4	14.67973	11.46	0.0000
1	ERROR	302.41314	236	1.28141		
	contype	52.61878	1	52.61878	53.40	0.0000
	cs	44.30679	4	11.07670	11.24	0.0000
	cv	10.90576	1	10.90576	11.07	0.0010
	csv	10.20380	4	2.55095	2.59	0.0376
2	ERROR	232.56024	236	0.98542		

TABLE Q.8: 'That-trace effects' and its Gramamtical Equivalent

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	3745.28144	1	3745.28144	1826.35	0.0000
	stage	22.65487	4	5.66372	2.76	0.0284
	version	69.74495	1	69.74495	34.01	0.0000
	sv	89.79759	4	22.44940	10.95	0.0000
1	ERROR	483.96455	236	2.05070		
	extr	3.22722	1	3.22722	2.00	0.1589
	es	11.40600	4	2.85150	1.76	0.1367
	ev	6.21306	1	6.21306	3.85	0.0511
	esv	9.94939	4	2.48735	1.54	0.1915
2	ERROR	381.29035	236	1.61564		

TABLE Q.9: Grammatical Extraction in Simple and Embedded Sentences

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	15571.85643	1	15571.85643	10175.73	0.0000
	stage	54.41560	4	13.60390	8.89	0.0000
	version	79.64774	1	79.64774	52.05	0.0000
	sv	42.84241	4	10.71060	7.00	0.0000
1	ERROR	361.14944	236	1.53029		
	conttype	321.92205	1	321.92205	445.72	0.0000
	cs	7.42722	4	1.85680	2.57	0.0386
	cv	11.77161	1	11.77161	16.30	0.0001
	csv	7.08265	4	1.77066	2.45	0.0468
2	ERROR	170.45272	236	0.72226		
	extrtype	282.64400	2	141.32200	158.90	0.0000
	es	131.14776	8	16.39347	18.43	0.0000
	ev	14.70427	2	7.35214	8.27	0.0003
	esv	22.64008	8	2.83001	3.18	0.0016
3	ERROR	419.79063	472	0.88939		
	ce	33.41173	2	16.70586	23.85	0.0000
	ces	18.82938	8	2.35367	3.36	0.0009
	cev	2.43534	2	1.21767	1.74	0.1769
	cesv	24.13963	8	3.01745	4.31	0.0001
4	ERROR	330.55844	472	0.70034		

TABLE Q.10: Grammatical Extraction in Simple Sentences

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	10185.84523	1	10185.84523	9611.73	0.0000
	stage	38.90335	4	9.72584	9.18	0.0000
	version	15.08971	1	15.08971	14.24	0.0002
	sv	11.76972	4	2.94243	2.78	0.0277
1	ERROR	250.09634	236	1.05973		
	extrtype	237.61020	2	118.80510	162.32	0.0000
	es	74.92470	8	9.36559	12.80	0.0000
	ev	12.45461	2	6.22730	8.51	0.0002
	esv	27.85760	8	3.48220	4.76	0.0000
2	ERROR	345.46128	472	0.73191		

TABLE Q.11: Grammatical Extraction in Embedded Sentences

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	5707.93325	1	5707.93325	4785.24	0.0000
	stage	22.93947	4	5.73487	4.81	0.0010
	version	76.32964	1	76.32964	63.99	0.0000
	sv	38.15534	4	9.53883	8.00	0.0000
1	ERROR	281.50582	236	1.19282		
	extrtype	78.44553	2	39.22276	45.72	0.0000
	es	75.05244	8	9.38155	10.94	0.0000
	ev	4.68500	2	2.34250	2.73	0.0662
	esv	18.92211	8	2.36526	2.76	0.0055
2	ERROR	404.88779	472	0.85781		

TABLE Q.12: Subject Extraction in Simple and Embedded Sentences

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	6296.12164	1	6296.12164	6986.75	0.0000
	stage	36.81602	4	9.20401	10.21	0.0000
	version	66.73865	1	66.73865	74.06	0.0000
	sv	20.73701	4	5.18425	5.75	0.0002
1	ERROR	212.67193	236	0.90115		
	conttype	102.44359	1	102.44359	141.26	0.0000
	cs	8.17050	4	2.04262	2.82	0.0260
	cv	2.08283	1	2.08283	2.87	0.0914
	csv	8.86650	4	2.21663	3.06	0.0176
2	ERROR	171.14888	236	0.72521		

TABLE Q.13: Object Extraction in Simple and Embedded Sentences

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	6156.15941	1	6156.15941	6196.01	0.0000
	stage	17.64571	4	4.41143	4.44	0.0018
	version	8.51853	1	8.51853	8.57	0.0037
	sv	24.52299	4	6.13075	6.17	0.0001
1	ERROR	234.48231	236	0.99357		
	conttype	211.98693	1	211.98693	288.34	0.0000
	cs	6.42631	4	1.60658	2.19	0.0714
	cv	10.56340	1	10.56340	14.37	0.0002
	csv	12.43396	4	3.10849	4.23	0.0025
2	ERROR	173.50865	236	0.73521		

TABLE Q.14: Extraction from DP Object in Simple and Embedded Sentences

	SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F	TAIL PROB.
	MEAN	3402.21938	1	3402.21938	2405.51	0.0000
	stage	131.10162	4	32.77541	23.17	0.0000
	version	19.09484	1	19.09484	13.50	0.0003
	sv	20.22249	4	5.05562	3.57	0.0075
1	ERROR	333.78582	236	1.41435		
	conttype	40.90325	1	40.90325	61.74	0.0000
	cs	11.65979	4	2.91495	4.40	0.0019
	cv	1.56073	1	1.56073	2.36	0.1262
	csv	9.92183	4	2.48046	3.74	0.0057
2	ERROR	156.35364	236	0.66252		

Key and List of Abbreviations

extrtype = extraction-type conttype = construction-type

The abbreviations refer to the names of the main effects; the variable in the interactions are defined by their letter, for example, ecsv = extraction-type x construction-type x stage x version.

Appendix R

Friedman's Two-Way Analysis of Variance of Mean Ranks by Subjects

Abbreviations

Ungr = Ungrammatical
Gram = Grammatical
Gram Sub = Grammatical Subject
Gram Obj = Grammatical Object
Ungr Sub = Ungrammatical Subject
Ungr Obj = Ungrammatical Object
Ungr Ex fr Sub = Ungrammatical Extraction from Subject
Ungr Ex fr Obj = Ungrammatical Extraction from Object
Pass_Sub = Passive Subject

TABLE R.1: Ungrammatical Extraction from Relative Clauses

	Rank sums				
Item	low	mid	high	adv	ns
Ungr Obj	123.5	135.0	163.5	157.5	69.0
Gram Obj	171.0	171.5	126.5	102.5	36.0
Ungr Sub	175.0	195.0	183.5	178.0	75.5
Gram Sub	130.5	98.5	66.5	62.0	29.5
Friedman test statistic	21.49	53.65	88.10	100.09	45.79
Level of significance	0.0001	0.0000	0.0000	0.0000	0.0000
Degrees of freedom	3	3	3	3	3

TABLE R.2: Extraction from Adjuncts (1)

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr Obj	170.5	183.5	186.0	176.0	50.0
Gram Obj	127.5	113.5	86.0	73.5	21.0
Ungr Sub	195.5	200.0	189.5	181.0	55.0
Gram Sub	106.5	103.0	78.5	79.5	n/i[1]
Friedman test statistic	48.89	71.64	124.05	122.76	32.10
Level of significance	0.0000	0.0000	0.0000	0.0000	0.0000
Degrees of freedom	3	3	3	3	2

[1] n/i = not included in the Friedman test since standard deviation for the mean ranks obtained is zero.

TABLE R.3: Extraction from Adjuncts (2)

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr Obj	172.5	194.0	182.5	169.0	50.0
Gram Obj	145.5	127.5	93.5	79.0	n/i
Ungr Sub	178.5	194.5	194.5	181.0	54.0
Gram Sub	103.5	74.0	69.5	71.0	22.0
Friedman test statistic	35.01	103.46	131.21	121.25	28.95
Level of significance	0.0000	0.0000	0.0000	0.0000	0.0000
Degrees of freedom	3	3	3	3	2

TABLE R.4: Extraction from Wh-islands (1)

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr Obj	165.5	179.5	169.5	162.5	47.0
Gram Obj	128.0	111.5	110.5	96.0	21.0
Ungr Sub	165.5	171.0	181.5	176.0	58.0
Gram Sub	141.0	128.0	78.5	65.5	n/i
Friedman test statistic	10.45	33.08	79.39	100.66	34.38
Level of significance	0.0151	0.0000	0.0000	0.0000	0.0000
Degrees of freedom	3	3	3	3	2

TABLE R.5: Extraction from Wh-Islands (2)

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr Obj	163.0	160.5	168.0	146.5	67.5
Gram Obj	193.0	157.0	103.5	100.0	29.0
Ungr Sub	121.0	147.5	195.5	173.0	76.0
Gram Sub	123.0	125.0	73.0	80.5	37.5
Friedman test statistic	35.88	7.78	106.51	64.46	44.41
Level of significance	0.0000	0.0507	0.0000	0.0000	0.0000
Degrees of freedom	3	3	3	3	3

TABLE R.6: Extraction from Complex Noun Phrases

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr Obj	141.0	141.0	168.5	166.0	72.5
Gram Obj	149.0	152.0	119.5	108.5	37.0
Ungr Sub	145.0	165.5	169.5	155.5	73.0
Gram Sub	165.0	141.5	82.5	70.0	27.5
Friedman test statistic	3.32	3.97	58.99	70.90	48.16
Level of significance	0.3449	0.2642	0.0000	0.0000	0.0000
Degrees of freedom	3	3	3	3	3

TABLE R.7: 'That-trace effects' and its grammatical equivalent (1)

	Rank Sums				
Item	low	mid	high	adv	ns
Gram	92.0	89.5	80.0	61.0	n/i
Ungr	88.0	87.5	82.0	86.0	21.0
Friedman test statistic	0.27	0.07	0.07	12.76	0.0
Level of significance	0.6056	0.7946	0.7855	0.0004	1.0000
Degrees of freedom	1	1	1	1	0

TABLE-R.8: 'That-trace effects' and its grammatical equivalent (2)

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr	89.0	96.0	84.5	96.0	21.0
Gram	91.0	57.0	77.5	57.0	n/i
Friedman test statistic	0.07	29.82	0.91	29.82	0.0
Level of significance	0.7963	0.0000	0.3408	0.0000	1.0000
Degrees of freedom	1	1	1	1	0

TABLE R.9: Extraction from DP Subject, from DP Object and of DP Subject (1)

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr Ex fr Sub	130.5	145.5	149.5	144.0	39.5
Gram Sub	137.0	128.5	75.0	55.5	n/i
Gram Ex fr Obj	92.5	86.0	99.5	106.5	23.5
Friedman test statistic	19.26	31.31	53.40	77.38	12.19
Level of significance	0.0001	0.0000	0.0000	0.0000	0.0005
Degrees of freedom	2	2	2	2	1

TABLE R.10: Extraction from DP Subject, from DP Object and of DP Subject (2)

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr Ex fr Sub	125.5	134.0	137.5	141.5	41.0
Gram Sub	140.0	134.0	76.5	56.0	n/i
Gram Ex fr Obj	94.5	92.0	110.0	108.5	22.0
Friedman test statistic	18.01	19.60	34.56	72.91	17.19
Level of significance	0.0001	0.0001	0.0000	0.0000	0.0000
Degrees of freedom	2	2	2	2	1

TABLE R.11: Extraction from CP Subjects and CP Objects (1)

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr Ex fr Sub	82.5	85.0	80.0	69.0	22.0
Gram Ex fr Obj	97.5	95.0	82.0	84.0	41.0
Friedman test statistic	3.75	1.67	0.07	4.41	17.19
Level of significance	0.0528	0.1967	0.7855	0.0357	0.0000
Degrees of freedom	1	1	1	1	1

TABLE R.12: Extraction from CP Subjects and CP Objects (2)

	Rank Sums				
Item	low	mid	high	adv	ns
Ungr Ex fr Sub	99.0	106.0	81.0	79.0	41.0
Gram Ex fr Obj	81.0	74.0	81.0	74.0	22.0
Friedman test statistic	5.40	17.07	0.0	0.49	17.19
Level of significance	0.0201	0.0000	1.0000	0.4838	0.0000
Degrees of freedom	1	1	1	1	1

TABLE R.13: Extraction of DP Objects and from DP Objects (1)

	Rank Sums				
Item	low	mid	high	adv	ns
Object	66.0	69.5	61.5	n/i	n/i
From Object	114.0	113.5	100.5	50.0	21.0
Friedman test statistic	38.40	31.74	28.17	0.0	0.0
Level of significance	0.0000	0.0000	0.0000	1.0000	1.0000
Degrees of freedom	1	1	1	0	0

TABLE R.14: Extraction of DP Objects and from DP Objects (2)

	Rank Sums				
Item	low	mid	high	adv	ns
Object	71.0	70.0	61.0	n/i	n/i
From Object	109.0	110.0	101.0	50.0	21.0
Friedman test statistic	24.07	26.67	29.63	0.0	0.0
Level of significance	0.0000	0.0000	0.0000	1.0000	1.0000
Degrees of freedom	1	1	1	0	0

TABLE R.15: Extraction from CP Objects (1)

	Rank Sums				
Item	low	mid	high	adv	ns
From Object	164.0	168.0	195.0	183.0	61.5
Subject	120.0	136.5	103.5	99.5	50.0
Object	147.5	126.5	108.5	95.5	48.5
Pass_Sub	168.5	169.0	133.0	132.0	50.0
Friedman test statistic	14.44	14.19	58.87	57.75	3.13
Level of significance	0.0024	0.0027	0.0000	0.0000	0.3722
Degrees of freedom	3	3	3	3	3

TABLE R.16: Extraction from CP Objects (2)

	Rank Sums				
Item	low	mid	high	adv	ns
From Object	174.0	188.0	162.5	142.5	56.5
Subject	123.5	134.0	100.0	118.0	51.5
Object	153.5	132.0	123.0	100.5	51.5
Pass_Sub	149.0	146.0	154.5	139.0	50.5
Friedman test statistic	12.91	20.40	27.84	13.82	0.63
Level of significance	0.0048	0.0001	0.0000	0.0032	0.8899
Degrees of freedom	3	3	3	3	3

Appendix S

Pairwise Comparisons of Mean Ranks by Subjects[1]

Abbreviations

Ungr = Ungrammatical
Gram Sub = Grammatical Subject
Ungr Sub = Ungrammatical Subject
Ungr Ex fr Sub = Ungrammatical Extraction from Subject
Ungr Ex fr Obj = Ungrammatical Extraction from Object
Gram = Grammatical
Gram Obj = Grammatical Object
Ungr Obj = Ungrammatical Object
Pass_Sub = Passive Subject

S.1 Extraction from Relative Clauses

Low

	Ungr Sub 2.700000	Gram Obj 2.616666	Gram Sub 2.016666	Ungr Obj 1.900000
Ungr Sub		0.083334	0.683334**	0.800000**
Gram Obj			0.116666	0.716666**
Ungr Obj				0.600000

Mid

	Ungr Sub 2.933333	Gram Obj 2.583333	Ungr Obj 2.066666	Gram Sub 1.466667
Ungr Sub		0.350000	0.866667**	1.466666**
Gram Obj			0.516667	1.116666**
Ungr Obj				0.599999

High

	Ungr Sub 3.018518	Ungr Obj 2.648148	Gram Obj 2.074074	Gram Sub 1.111111
Ungr Sub		0.370370	0.944444**	1.907407**
Ungr Obj			0.574074	1.537037**
Gram Obj				0.962963**

Advanced

	Ungr Sub 3.060000	Ungr Obj 2.660000	Gram Obj 1.840000	Gram Sub 1.100000
Ungr Sub		0.400000	1.220000**	1.960000**
Ungr Obj			0.820000**	1.560000**
Gram Obj				0.740000**

Native speakers

	Ungr Sub 2.619047	Ungr Obj 2.333333	Gram Obj 1.333333	Gram Sub 1.047619
Ungr Sub		0.285714	1.285714**	1.571428**
Ungr Obj			1.000000**	1.285714**
Gram Obj				0.285714

[1] Differences in the mean ranks which are statistically significant at $p < 0.05$ are indicated by **.

S.2 Extraction from Adjuncts (1)

Low

	Ungr Sub 2.716666	Ungr Obj 2.416667	Gram Obj 1.783334	Gram Sub 1.483333
Ungr Sub		0.633333**	0.933332**	1.233333**
Ungr Obj			0.299999	0.933334**
Gram Obj				0.300001

Mid

	Ungr Sub 2.7333333	Ungr Obj 2.450000	Gram Obj 1.500000	Gram Sub 1.350000
Ungr Sub		0.283333	1.233333**	1.383333**
Ungr Obj			0.950000**	1.100000**
Gram Obj				0.150000

High

	Ungr Sub 2.740741	Ungr Obj 2.666666	Gram Obj 1.259259	Gram Sub 1.148148
Ungr Sub		0.074075	1.481482**	1.592593**
Ungr Obj			1.407407**	1.518518**
Gram Obj				0.111111

Advanced

	Ungr Sub 2.568627	Ungr Obj 2.470588	Gram Sub 1.196079	Gram Obj 1.078431
Ungr Sub		0.098038	1.372548**	1.490196**
Ungr Obj			1.274509**	1.392157**
Gram Sub				0.117648**

Native speaker

	Ungr Sub 2.333333	Ungr Obj 2.095238	Gram Obj 1.047619	Gram Sub 1.000000
Ungr Sub		0.238095	1.285714**	1.333333**
Ungr Obj			1.047619	1.095238**
Gram Obj				0.047619**

S.3 Extraction from Adjuncts (2)

Low

	Ungr Sub 2.716667	Ungr Obj 2.600000	Gram Obj 2.266667	Gram Sub 1.583334
Ungr Sub		0.116667	0.450000	1.133333**
Ungr Obj			0.333333	1.016666**
Gram Obj				0.683333**

Mid

	Ungr Obj 3.016666	Ungr Sub 3.050000	Gram Obj 2.033333	Gram Sub 1.150000
Ungr Obj		0.033334	0.983333**	1.866666**
Ungr Sub			1.016667**	1.900000**
Gram Obj				0.883333**

High

	Ungr Sub 3.092592	Ungr Obj 2.851852	Gram Obj 1.537037	Gram Sub 1.092593
Ungr Sub		0.240749	1.555555**	1.999999**
Ungr Obj			1.314815**	1.759259**
Gram Obj				0.444444

Advanced

	Ungr Sub 2.9000000	Ungr Obj 2.660000	Gram Obj 1.340000	Gram Sub 1.180000
Ungr Sub		0.240000	1.560000	1.720000**
Ungr Obj			1.320000**	1.480000**
Gram Obj				0.160000

Native speaker

	Ungr Sub 2.428572	Ungr Obj 2.238095	Gram Sub 1.190476	Gram Obj 1.000000
Ungr Sub		0.190477	1.238096**	1.428572**
Ungr Obj			1.047619	1.238095**
Gram Sub				0.190476

S.4 Extraction from Wh-Islands (1)

Low

	Ungr Sub 2.466667	Ungr Obj 2.450000	Gram Sub 2.050000	Gram Obj 1.816666
Ungr Sub		0.016667	0.416667	0.650001**
Ungr Obj			0.400000	0.633334**
Gram Sub				0.233334

Mid

	Ungr Obj 2.661016	Ungr Sub 2.474577	Gram Sub 1.864407	Gram Obj 1.610170
Ungr Obj		0.186439	0.796609**	1.050846**
Ungr Sub			0.610170	0.864407**
Gram Sub				0.254237

High

	Ungr Sub 2.703703	Ungr Obj 2.481481	Gram Obj 1.685185	Gram Sub 1.111111
Ungr Sub		0.222222	1.018518**	1.592592**
Ungr Obj			0.796296**	1.370370**
Gram Obj				0.574074

Advanced

	Ungr Sub 2.760000	Ungr Obj 2.520000	Gram Obj 1.620000	Gram Sub 1.040000
Ungr Sub		0.240000	1.140000**	1.720000**
Ungr Obj			0.900000**	1.480000**
Gram Obj				0.580000

Native speaker

	Ungr Sub 2.619048	Ungr Obj 2.095238	Gram Obj 1.047619	Gram Sub 1.000000
Ungr Sub		0.523810	1.571429**	1.619048**
Ungr Obj			1.047619	1.095238**
Gram Obj				0.047619

S.5 Extraction from Wh-Islands (2)

Low

	Gram Obj 2.950001	Ungr Obj 2.533333	Gram Sub 1.833333	Ungr Sub 1.800000
Gram Obj		0.416668	1.116668**	1.150001**
Ungr Obj			0.700000	0.733333
Gram Sub				0.033333

Mid

	Ungr Obj 2.440678	Gram Obj 2.338983	Ungr Sub 2.101695	Gram Sub 1.796610
Ungr Obj		0.101695	0.338983	0.644068**
Gram Obj			0.237288	0.542373
Ungr Sub				0.305085

High

	Ungr Sub 3.314815	Ungr Obj 2.833333	Gram Obj 1.777778	Gram Sub 1.222222
Ungr Sub		0.481482	1.537037**	2.092593**
Ungr Obj			1.055555**	1.611111**
Gram Obj				0.555556

Advanced

	Ungr Sub 2.960001	Ungr Obj 2.480000	Gram Obj 1.740000	Gram Sub 1.360000
Ungr Sub		0.480001	1.220001**	1.600001**
Ungr Obj			0.740000**	1.120000**
Gram Obj				0.380000

Native speaker

	Ungr Sub 3.095238	Ungr Obj 2.761904	Gram Sub 1.571429	Gram Obj 1.238095
Ungr Sub		0.333334	1.523809**	1.857143**
Ungr Obj			1.190475**	1.523809**
Gram Sub				0.333334

S.6 Extraction from Complex Noun Phrases

High

	Ungr Obj 2.555556	Ungr Sub 2.537037	Gram Obj 1.851852	Gram Sub 1.240741
Ungr Obj		0.018519	0.703704**	1.314815**
Ungr Sub			0.685185**	1.296296**
Gram Obj				0.611111

Advanced

	Ungr Obj 2.740000	Ungr Sub 2.560000	Gram Obj 1.820000	Gram Sub 1.200000
Ungr Obj		0.180000	0.920000**	1.540000**
Ungr Sub			0.740000**	1.360000**
Gram Obj				0.620000

Native speaker

	Ungr Sub 2.714285	Ungr Obj 2.666667	Gram Obj 1.476190	Gram Sub 1.047619
Ungr Sub		0.047618	1.238095**	1.666666**
Ungr Obj			1.190477**	1.619048**
Gram Obj				0.428571

S.7 Extraction from DP Subject, from DP Object and of DP Subject (1)

Low

	Gram Sub 2.200000	Ungr Ex fr Sub 2.066667	Gram Ex fr Obj 1.450000
Gram Sub		0.1333333**	0.750000**
Ungr Ex fr Sub			0.616667**

Mid

	Ungr Ex fr Sub 2.350000	Gram Ex fr Obj 2.083333	Gram Sub 1.383333
Ungr Ex fr Sub		0.266667	0.966667**
Gram Obj			0.700000**

High

	Ungr Ex fr Sub 2.666667	Gram Ex fr Obj 1.759259	Gram Sub 1.351852
Ungr Ex fr Sub		0.907408**	1.314815**
Gram Obj			0.407407

Advanced

	Ungr Ex fr Sub 2.588235	Gram Ex fr Obj 1.882353	Gram Sub 1.019608
Ungr Ex fr Sub		0.705882**	1.568627**
Gram Obj			0.862745**

Native speaker

	Ungr Ex fr Sub 2.333333	Gram Ex fr Obj 1.571429	Gram Sub 1.000000
Ungr Ex fr Sub		0.761904**	1.333333**
Gram Obj			0.571429

S.8 Extraction from DP Subject, from DP Object and of DP Subject (2)

Low

	Gram Sub 2.216667	Ungr Ex fr Sub 1.983333	Gram Ex fr Obj 1.466666
Gram Sub		0.516667**	0.750001**
Ungr Ex fr Sub			0.233334**

Mid

	Ungr Ex fr Sub 2.083333	Gram Sub 2.083333	Gram Ex fr Obj 1.416667
Ungr Ex fr Sub		0.000000	0.666666**
Gram Sub			0.666666**

High

	Ungr Ex fr Sub 2.351851	Gram Ex fr Obj 1.888889	Gram Sub 1.296296
Ungr Ex fr Sub		0.462962**	1.055555**
Gram Obj			0.592593**

Advanced

	Ungr Ex fr Sub 2.529411	Gram Ex fr Obj 1.921569	Gram Sub 1.019608
Ungr Ex fr Sub		0.607842**	1.509803**
Gram Obj			0.901961**

Native speaker

	Ungr Ex fr Sub 2.380952	Gram Ex fr Obj 1.476191	Gram Sub 1.000000
Ungr Ex fr Sub		0.904761**	1.380952**
Gram Obj			0.476191

S.9 Grammatical extraction from CP Objects (1)

Low

	Pass-Sub 2.4333333	From Object 2.366668	Object 2.116666	Subject 1.700000
Pass_Sub		0.066665	0.316667	0.733333**
From Object			0.250002	0.666665**
Object				0.416666

Mid

	From Object 2.416667	Pass_Sub 2.400000	Subject 1.983333	Object 1.783333
From Object		0.016667	0.433334	0.633334**
Pass_Sub			0.416667	0.616667
Subject				0.200000

High

	From Object 2.907407	Pass_Sub 1.925926	Object 1.555556	Subject 1.500000
From Object		0.981481**	1.351851**	1.407407**
Pass_Sub			0.370370	0.425926
Object				0.055556

Advanced

	From Object 2.647059	Pass_Sub 1.882353	Subject 1.392157	Object 1.294118
From Object		0.764706**	1.254902**	1.352941**
Pass_Sub			0.490196	0.588235
Subject				0.098039

S.10 Grammatical extraction from CP Objects (2)

Low

	From Object 2.566667	Obj 2.283333	Pass_Sub 2.200000	Subject 1.783333
From Object		0.283334	0.366667	0.783334**
Object			0.083333	0.500000
Pass_Sub				0.416667

Mid

	From Object 2.639344	Pass_Sub 2.032787	Object 1.836066	Subject 1.819672
From Object		0.606557	0.803278**	0.819672**
Pass_Sub			0.196721	0.213115
Object				0.016394

High

	From Object 2.185185	Pass_Sub 1.981482	Object 1.574074	Subject 1.222222
From Object		0.203703	0.611111	0.962963**
Pass_Sub			0.407408	0.759260**
Object				0.351852

Advanced

	From Object 2.019607	Pass_Sub 1.980392	Subject 1.647059	Object 1.352941
From Object		0.039215	0.372548	0.666667
Pass_Sub			0.333333	0.627451
Subject				0.294118